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THE METAL WORKER.

NEW YORK AND CHICAGO.

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Retrospective.

The year 1894 has dropped into the past, and its departure is regarded with a feeling of relief by the many to whom it brought little else than disappointment and discouragement. It will long be remembered as the year of exceptional business depression and trade dullness. Following on a "panic year," its opening found the business interests of the country in a condition of extreme exhaustion, from which they have been for the past 12 months struggling to recover, through many and diverse hindrances. The close of the year offered, in many respects, a much more encouraging outlook than was presented at the end of 1893. The prospects were very gloomy at that time; but since then several causes of uncertainty have been removed and the country has overcome such obstacles as show its extraordinary power of recuperation in the face of difficulties and disasters and give hope and promise of better things in the new year. A casual glance at the happenings of the past year which bore more particularly on general business shows how eventful a year 1894 really was. The tariff and currency questions were those which exercised the most potent influence on the course of trade. The tariff was practically settled with the passage of the Wilson-Gorman bill, in the late summer, after a protracted and exasperating discussion in the Senate, during the course of which trade was almost paralyzed. It passed too late to favorably affect the fall trade to any great extent, and dullness and depression marked the remainder of the year.

Finance and Other Matters.

The currency question is still pending, but largely robbed of its terrors. The attempt to coin the seigniorage was frustrated by the President's veto, thereby removing one cause of possible trouble. The large shipments of gold

abroad and the depletion of the Treasury reserve have been matters of constant anxiety during the whole year. The shrinkage in the Government holdings of the metal has been met by two bond issues of \$50,000,000 each, and a third issue of a like amount is now talked of. Railway earnings have shown a terrible falling off, but this has been largely met by reductions in the operating expenses of the roads. Money has been a drug on the market, and speculation in stocks and bonds has reached only about one half its normal volume in this market, notwithstanding the unprecedentedly low interest rates of money. Wheat, cotton, iron and other staples have sunk in price down to a level never hitherto dreamt of, diminishing the purchasing power of the producers and so affecting all trade in manufactured products. Added to these influences of depression were the great labor strikes of the summer in the coke and coal mining and railroad industries. At one time the transportation facilities of a great part of the country were held entirely in check, and the troubles reached such a serious pitch as to threaten a veritable revolution, requiring the aid of the Federal troops for its suppression. On the top of these troubles came the failure of the corn crop, and consequent losses to the farmers and the railroad companies which handle that crop. Besides these losses there were vast forest and prairie fires, floods and other disasters in various parts of the country, which wiped out an immense amount of property and caused distress and pecuniary ruin to a multitude of people. Truly this heavy catalogue of troubles was enough for one year, and we have reason for supreme thankfulness that the country has emerged into the new year in such good shape. May 1895 bring compensation to the disappointed in the shape of stimulated trade and commerce and renewed industrial activity.

Our American Tin Plate Lists.

In this issue is printed our third quarterly list of American tin plate works, together with an alphabetically arranged list of the domestic brands of tin andterne plates now on the market. The information therein given is compiled from reports kindly furnished by the manufacturing firms to *The Metal Worker* within the last ten days. They are therefore as accurate and comprehensive as possible. These lists have been found very useful by our readers, and we have endeavored to make them as complete as possible. The present exhibit contains the names of a number of new works now in course of erection, and fairly shows the condition of the tin plate manufacturing industry in general at the close of the year 1894.

Business Mortality in 1894.

The record of the business failures during the year 1894 of course shows a striking contrast with the stupendous aggregate of the panic year 1893. The number of mercantile failures in 1894 was still large, being 12,721, against 15,560 in 1893, but they were far smaller. The figures compiled by *Bradstreet's*, which refer only to those concerns whose actual assets were smaller than their liabilities, show that the assets declined from \$262,415,851 in 1893 to \$79,755,067 in 1894, and the liabilities from \$402,427,818 in 1893 to \$149,595,434 in 1894. The percentage of assets to liabilities has declined from 65 per cent. in 1893 to 53 per cent. in 1894, which is chiefly due to the fact that during the panic year business houses which would be solvent under ordinary circumstances were forced to succumb.

Bradstreet's groups the number of failures as follows:

Number of Failures.			
	1894.	1893.	
States.....	1,784	2,139	
Eastern.....	3,018	3,415	
Middle.....	2,885	4,371	
Western.....	1,247	1,630	
Northwestern.....	18,132	21,419	
Southern.....	1,182	1,202	
Pacific.....	403	884	
Territories.....			
Totals.....	12,721	15,560	

The assets in the different groups stood as follows:

Assets of Failed Business Houses.			
	1894.	1893.	
Eastern.....	\$7,826,381	\$23,867,874	
Middle.....	26,421,055	74,118,915	
Western.....	18,132,474	51,063,224	
Northwestern.....	8,824,874	42,626,570	
Southern.....	11,623,102	24,780,882	
Pacific.....	5,719,936	13,566,493	
Territories.....	1,507,245	2,311,853	
Totals.....	\$79,755,067	\$262,415,851	

The liabilities grouped in the same manner show the following totals:

Liabilities of Failed Business Houses.			
	1894.	1893.	
Eastern.....	\$18,750,018	\$45,465,110	
Middle.....	51,493,177	124,381,173	
Western.....	39,138,654	109,498,547	
Northwestern.....	15,301,215	62,375,448	
Southern.....	21,285,698	38,478,231	
Pacific.....	10,608,257	18,263,439	
Territories.....	2,077,803	3,873,580	
Totals.....	\$149,595,434	\$402,427,818	

A curious fact is brought out by the returns, and that is, that the number of concerns in business declined during 1894. It passed one million in 1891, being 1,010,000, rose to 1,035,000 in 1892, increased to 1,050,000 in 1893 and then dropped to 1,047,000 in 1894.

An interesting comparison is also made concerning the bank suspensions during the two years under review. Within two years 174 national banks closed their doors, temporarily or otherwise, owing \$73,718,000 and having \$89,184,000 to pay it with, a large proportion of them resuming business. In the same two years 219 State banks shut down, permanently or otherwise, owing \$40,887,000 and having \$15,409,000 assets. Private banks present a total of 220 closed within two years, with liabilities of \$28,935,000 and assets of \$37,828,000. The 56 savings banks reported embarrassed by the panic year 1893 and during 1894 show total debts of \$18,546,000 and assets of \$19,307,000. Loan and trust company embarrassments within two years number, as reported, 17, with \$23,400,000 liabilities and \$14,867,000 assets.

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THE LETTER BOX.

Galvanizing Iron Castings.

From A. & S., Penn Yan, N. Y.—We would like to be informed through the columns of *The Metal Worker* of a good formula for galvanizing small iron castings, just as they come from the rattler.

Answer.—The process of galvanizing, though an easy one in theory, requires considerable practical knowledge and experience to produce satisfactory results. The pot for holding the melted zinc is usually made of wrought iron and should be very heavy to be of sufficient strength to hold the contained zinc. The pot, as a rule, is set in brick, supplied with a coke fire about the bottom and sides, and should contain a sufficient amount of zinc so that the temperature will not be rapidly reduced as the articles are immersed. The surface of the zinc is covered with powdered sal-ammoniac to protect it from the action of the atmosphere, and also to act as a flux. An addition of about 3 per cent. of tin to the zinc improves the appearance of the work. The molten zinc gradually takes up iron from the pot and from the articles galvanized. This formation being heavier than zinc, sinks to the bottom of the kettle while in a melted state and at rest. The action of dipping mixes the alloy with the zinc and gives a rough appearance to the work. As a remedy, the melted zinc should be allowed to stand until the alloy has settled to the bottom of the kettle, when it can be removed by means of a perforated iron skimmer. As the sal ammoniac and atmospheric oxygen act to a certain extent on the molten zinc, a scum is formed which must be removed from time to time. The sal-ammoniac covering the zinc is also vaporized during the process of galvanizing, and additions are to be made as required. The first step to be taken with the castings is to remove the outer scale or oxide, and much of this can be done with the rattler. If the castings are sufficiently clean for galvanizing, well and good; if not, they can be scoured with sand or coke. As much of the success of the operation depends on a clean surface, it may be necessary to place the castings in a bath of sulphuric acid and water. If desired, the articles can be kept for some time after cleaning by being covered with pure water. They can then be dipped in muriatic acid, dried in a reverberatory furnace, or on a sheet of iron placed over a fire. While hot the castings are taken and placed in the melted zinc, and allowed to remain

for a short time, when they are taken out, the superfluous zinc being allowed to drain off, or removed by brushing. Small castings can be taken out of the zinc by means of an iron skimmer. They must be separated before cooling so they will not stick together.

Pipe for Heating Water.

From S. B. C., New Orleans, La.—The tank is to be constructed of a capacity to admit of 40,000 pounds of water per hour passing through it. The water system is to contain 10,000 pounds, and to pass through the tank four times an hour. The water is supposed to be heated to 160° at its entrance to the tank, and is to leave the tank heated to 210°; in other words, to be increased 50° in temperature. The question is, how many feet of 1-inch pipe will be required to give the requisite heating capacity from steam? The size of the boiler is supposed, of course, to be sufficient to supply the necessary amount of steam. The tank can be made in any way that suits the engineer's fancy. The one thing desired is to heat the water under the conditions above given.

Answer.—With steam at any pressure per square inch, vertical inch pipe heating surface will transmit 76 heat units per hour for each Fahrenheit degree of difference between the interior steam and the exterior liquid, and horizontal each pipe will transmit 110 heat units. The total number of heat units to be transmitted is practically found by multiplying the weight of water—in the present case 40,000 pounds—by the number of degrees its temperature is to be raised, in the present case 50° F.

$40,000 \times 50 = 2,000,000$, which is the number of heat units the pipe will have to transmit.

The total difference of temperature with steam at 212° (assumed to be the temperature at which steam passes through the pipes) is $212^\circ - 160^\circ = 52^\circ$ F. But assuming that the water is run into the tank in a body at 160° F. and raised to 210° by the steam pipes, the temperature within the pipes will remain constant while the temperature of the water will be gradually raised. The average temperature of the liquid will therefore be 185°, and the average difference of temperature will be $212^\circ - 185^\circ = 27^\circ$ F. As each foot length of vertical pipe will pass into the exterior liquid 76 heat units per hour for each degree of mean difference of temperature, $27 \times 76 = 2052$ heat units, and $\frac{2,000,000}{2052} = 975$ feet run if the pipes are arranged vertically. Similarly,

$27 \times 110 = 2970$, the number of heat units each foot in length of horizontal pipe will pass into the liquid hourly, and $\frac{2,000,000}{2970} = 674$, the number of feet of horizontal inch pipe needed.

If live steam be used less pipe will be needed, depending upon the pressure carried. But exhaust steam will be available, and is generally used for heating liquids when it can be so used, and it is economical practice to do this. The exhaust from a 70 horse power engine using 30 pounds of water per horse-power per hour would do this heating; and in general every pound of exhaust steam gives off 966 heat units in heating water; therefore $\frac{2,000,000}{966} =$

2070, which is the number of pounds of exhaust steam required.

Evans Hot Air Furnace.

From B. C., New York.—Can any reader of *The Metal Worker* tell me where the Evans hot air furnace is manufactured, or whether it is at present on the market?

The new British torpedo boat destroyer "Ferret" is, says an English service journal, simply a box of machinery from end to end. Her length is slightly in excess of the old time line of battle ships, and her beam is one-third less. Under forced draft she can be driven at a speed of about 27 knots per hour. Armed with two quick firing guns and four torpedo tubes, she can pursue and overtake the swiftest torpedo boat afloat, and with her more powerful gun fire, destroy her. Four funnels, four boilers, triple expansion engines, making at their highest speed some 400 revolutions per minute, steam steering apparatus, and machinery for working anchors and cables, all crowded into the narrowest limits, make up this result of modern mechanical engineering and shipbuilding skill.

A Jacksonville special asserts that the severe frost of last week will entail a loss of about \$3,000,000 to the fruit growers of Florida.

A statement of the capital invested in and the value of the annual product of each manufacturing establishment at Muncie, Ind., compiled by a Cincinnati newspaper, places the aggregate capital at \$4,402,000 and the annual product at \$11,572,000.

It is stated that the railroad suspension bridge at Niagara Falls is to be superseded by an arched cantilever structure. It is also understood that the 1200-foot roadway suspension bridge near the falls will be replaced by an arch bridge.

ROOFING AND CORNICE.

The Roofing and Cornice Trade.

IN A ROUGH WAY it is true that the condition of any one of the larger industries of the country is a measure of the general prosperity. We seldom find in any business analysis that there is profitable activity in one line of trade while the reverse conditions exist in other lines. So, therefore, as might have been expected, the record for the roofing and cornice business is not a lively one, nor has the trade brought wealth to its members during the past 12 months.

Too Much Legislation.

The gist of the reports that we have received from all over the country is that profits have been small, if any, competition has been sharper and the volume of trade diminished. It is noteworthy that many correspondents have complained of the work of our national legislators. We do not refer merely to the tariff policy that is associated with one of the political parties, for in that matter the correspondents write one way or the other according as they happen to be Republicans or Democrats. But what is impressive is that so many of them, as is the case in every other line of trade likewise, complain of the uncertainty which overhangs all business so long as there is danger at any moment of tariff enactments changing the situation.

One correspondent living in the South writes: "The only thing that we need is about three years' freedom from sittings of Congress. If they will only leave the tariff and the finances alone we will come out ahead." Another correspondent in Chicago says: "If the Congress of the United States would make some settled agreement on the tariff business and let it remain for ten years, I believe the people, as a whole, would be much better off."

Machinery.

There is a marked tendency in all trades to subdivide labor and utilize machinery, and the building trades are no exception. This change is a subject of note in the roofing and cornice business, for, as one of our correspondents points out, "there is a growing tendency to buy everything in the shape of piping, gutters, repair tin and other goods ready for use instead of putting the material together." The number of concerns dealing in cornices and roof finishing materials, that is,

finials, creatings and the like, is constantly increasing, and the country tinner is now in a position to buy ready made all the material necessary for a very handsome piece of work. The increasing interest that is being taken in sheet metal for interior finish is notable, the demand for ceiling and side wall plates having increased not a little.

Competition.

In looking over the communications that we have received from members of the trade, there is a startling unanimity in the answers that have been given to our questions concerning the competition and profits. Not a single correspondent has said that competition was less, and very few admit that it was not worse than last year, all the rest saying it has become keener. One correspondent expresses it "as meaner, fiercer and more reckless than ever before." A Minnesota correspondent complains that "a large number of men who formerly worked by the day, not being able to get work, have bid for contracts, basing their profits on a day's work for themselves and trusting to luck to get the materials, and paying for the materials and for their men's wages when they get the money. This is hard on those who have capital invested in a plant and is a source of a great deal of annoyance."

Another correspondent, writing from one of the Eastern States, alludes to the poor work that is resulting from such keen competition. He says: "The greatest trouble with our business in this city is the deplorable tendency to slight work, and the motto seems to be, anything is good enough so it will pass. Very few take any pride in doing good work, and the architects help this state of affairs along by accepting work that should never pass. The consequence is that they can afford to do it cheaper than others and get the most of the work. This is very discouraging to any one trying to do good work and trying to keep up a well earned reputation for good work."

Profits.

Profits have been almost invariably less. The figures given show a reduction from 10 to as high as 75 per cent., though, leaving out the extremes, a fair average of profits would be about 20 per cent less than last year. Eastern manufacturers are being pushed by Western concerns, one of the well-known firms in this part of the country saying that the Western competition reduced their sales 40 per cent. below

what they were two years ago. Another conservative business house having to do with sheet metal machinery say that their gross profits, compared with previous years, have not been reduced, but that the expenses for selling have so increased, in consequence of keen competition, that the net profits are considerably smaller than they have been.

Volume of Trade.

Respecting the volume of trade there is considerable diversity of report, though the general average shows a reduction compared with previous years. During the early part of 1894 the falling off was considerable, but later in the year business picked up, but not in all cases sufficiently to cover the reductions of the early part of the year. This point is dwelt upon by some of our correspondents, who draw a line around the first of July. In another case, the first eight months of the year are reported as bad. The reduction in volume from those who have furnished actual figures would average up in the neighborhood of 30 per cent. Local causes have affected the trade in some respects, as, for instance, one correspondent, who is adjacent to the cotton district, says that the large crop of that staple created a big demand for their sheet metal roofing and siding for erecting cotton warehouses and compressors.

Encouraging Features.

In spite of the unsatisfactory showing in the volume of business and the low profits there are encouraging features to note in the record of the year. The struggle has made all people conservative, and there is a general feeling that the condition of the purchasing classes is better than it had been. One would have thought, in view of the lessened business and unprofitable times, that the buying public would be less able to purchase and credits generally would have been unstable. The fact that this is not so, however, is particularly gratifying. Many report the situation in this respect unchanged, while a large number say it is improved. It must be borne in mind that, in part, this more satisfactory report is owing to the greater care that has been taken in extending credit. Accounts have been scrutinized in a way that they have never been before, and after the panic of 1893 the financial standing of customers has been looked into more narrowly. Another thing is that the buying classes have seen the necessity of economy, and are paying for neces-

series instead of getting credit for luxuries. A correspondent in the East who does business all over the country gave as the record of his experience that a more increased strength was noted in the East and South than in the West, but this is hardly in agreement with reports we have received from the South itself, one prominent firm writing: "The low price of cotton has greatly weakened the finances of the dealers in the cotton belts; also sugar planters have suffered some." The same correspondent speaks of the congested state of the markets, and believes that relief can only come by increasing the demand either at home or abroad, or else making less goods and turning the flow of population from the cities to the agricultural sections.

A Pennsylvania firm, speaking of their sales, state that they have been smaller, but payments have been more prompt, the demand coming not so much from the large trade as from the smaller dealers. A correspondent in Houston, Texas, speaks of the competition that they are meeting from tin shops who, with neither character nor credit, are doing cornice work at prices that are absurdly low. Speaking of the general trade in Texas, they say it is in a little better condition than usual. "The whole community seems to have adopted a hand-to-mouth policy during the past year, and as a result the country merchant has not overloaded his store with goods nor his books with doubtful credits, and there is encouragement in the conservative policy that the people in general are pursuing. We feel that the foundation for a solid prosperity is being laid during these hard times in the lesson of economy and self reliance that the people are learning."

The Outlook.

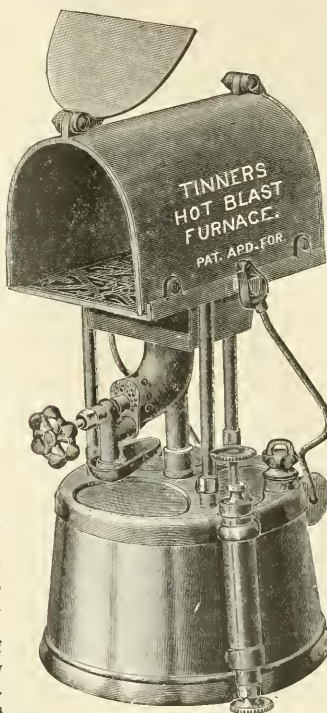
So far as the past is concerned it is a matter of record and the business man knows from his books whether his trade has increased or decreased and at what profit it has been done. Dealing with the future, however, is quite different. The prophecies are largely a matter of temperament, or they are affected by the profits of the year that has passed. If things have gone well with a firm they are hopeful of the future, but it is hard to prophecy smooth things with a losing trade to look back upon. The roofing and cornice trade is, in a sense, a secondary industry, since it depends upon the building trade for its prosperity. There appears to be a good deal of talk about new buildings, but some of our correspondents complain that the contracts are not being let, so that there is no certainty that actual activity will result. One of the conservative Western houses, well known in the trade, say: "Our opinion is that there is no prospect of activity until the great questions which are being tossed about by our intelligent Congress

are settled and they go home to their farms."

A Canadian correspondent refers to the way his business is being injured by the use of cedar shingles, and adds that the people generally prefer wood to metal for roofing "on account of its first cost being less, and also because their great-grandfathers used wood." The American manufacturers may congratulate themselves that, with all the obstacles in the way of their prosperity, they do not encounter a similar prejudice against new goods merely because of their novelty.

New Roofers' and Tinnners' Furnace.

The White Mfg. Company, 40 and 43 State street, Chicago, have just brought out the new design of roofers' and tinnners' furnace which is herewith



New Roofers' and Tinnners' Furnace.

illustrated. It will be observed that the hood on this furnace is made of cast iron, with a swinging door at each end. These doors are hung at the top so that their own weight swings them shut, while the hinges have long arms to enable the doors to be opened back on the top of the hood when so desired. The hood is of large size to accommodate soldering irons of any description. It is claimed that by the construction employed every particle of heat is saved for the irons, none wasted. The utmost care has been taken to make this a perfect furnace, for use in the strongest wind. The burner has a generator of double strength, which, it is said,

will not clog up. It will run for three hours without pumping and the heat can be regulated to any required degree. The burner has a patent renewable needle valve seat, which can be replaced at very slight cost when worn out. The reservoir is spun out of one piece of heavy sheet brass, covered with a cast top, constructed so as to neither sweat nor leak, tested to 50 pounds pressure, capacity for 1 gallon of gasoline and able to run the furnaces for 10 to 12 hours without refilling.

FLASHINGS.

J. J. COLVIN, 159 La Salle street, Chicago, is to furnish the galvanized iron work for the residence of Joseph F. Ward, Evanston, Ill.; also the galvanized iron, tin and copper work for the residence of E. T. Malone, Oak Park, Ill.

ALL THE SLATE QUARRIES in the Bangor (Pa) district shut down on January 1, owing to the cold weather. They will continue inactive until spring.

M. CULLEN, Hartford, Conn., writes that he has been very busy during the last of the year with contracts for sheet metal work in cornices, skylights, inside metal work and some copper work.

JOHN SETON, 78 and 80 Washington avenue, Brooklyn, N. Y., has installed in his shop a new press for cornice and skylight work, weighing 20,000 pounds, manufactured by Geo. A. Ohl & Co., Newark, N. J., which he refers to as the most perfect machine so far made for this line of work.

THE GARRY IRON & STEEL ROOFING COMPANY, Cleveland, Ohio, in anticipation of a better business, are enlarging their works, and are going into the manufacture of iron trusses, &c., and a general line of architectural work in iron and steel. They also expect to push the cornice, eave trough and conductor trade more extensively the coming season. Their fire proof shutter has, we understand, been adopted by the Board of Underwriters and is meeting with a large demand.

WAGNER BROS., 1350 Diversey street, Chicago, have finished a fine job of copper and galvanized iron work on the Masonic Temple, Ravenswood, Ill., including a large emblem in copper which ornaments the front of the building.

Sheet Metals.

Reports with which we have been favored from manufacturers of sheet metals operating in widely separated portions of the United States indicate that the year just closed was one of trial to those industries. This is especially true of the sheet iron trade. Partaking of the general depression which affected all trades to a greater or lesser extent, the sheet iron business, for the greater part of the year, suffered severely from the extreme dullness of the building and other trades, which constitute their principal clientele. Fierce competition for such orders as were available resulted in a shearing down of prices to an extent out of all proportion to the decline in raw materials. Many mills were forced to close down

and remained idle for the greater part of the year. Others were forced into the hands of receivers. Efforts were made from time to time to strengthen prices for black and galvanized sheets, but without avail, and the year closed with prices down to the lowest level known.

During the last quarter of the year, however, the demand for sheet iron showed a gratifying expansion. Stocks were reduced to a very narrow margin, owing to the large reduction in output, caused by the closing down of a majority of the mills. The reviving demand encouraged idle plants to resume operations, and in the last months of the year the trade experienced quite a little boom, so far as the volume of business went. Prices, nevertheless, continued weak and the margin of profits to the makers far from satisfactory.

The Eastern Manufacturers.

Eastern manufacturers of sheet iron place the shrinkage in volume of their business at from 25 to 50 per cent. Probably about 30 per cent. represents the average loss throughout the mills. Competition is generally referred to by them as being keener than ever, and the margin of profit much less than in previous years. As a rule, the manufacturers have found collections satisfactory, although some of their weaker customers have failed them.

A firm in the Schuylkill Valley of Pennsylvania, manufacturing sheet iron and steel, refer to this subject as follows:

"These customers that have always been good are now better, there being a disposition with such houses to discount all bills. Those that have heretofore been doubtful or slow are slower than ever now. Failures, however, have been less frequent than in 1893, and smaller in amount. This is the only encouraging feature for the present year as compared with last."

This concern, unlike most, see no particular encouragement in the outlook for 1895, and regard the new tariff as extremely damaging to their business.

Another large Pennsylvania concern, who report a falling off in the volume of their business of 25 per cent., regard the outlook as fair for the early part of the year, to be followed by improvements both in demand and prices.

Yet another firm in the same State mention a loss of as much as 50 per cent. in the volume of business done, with shrinking profits. They do not look for much improvement this year. The general tendency of manufacturers in that section is, however, to the view that the business of 1895 will be fair in volume, but at very close margins.

The Middle States.

From a rolling mill in Ohio, producing black and galvanized sheet iron and steel, we get the following comparatively favorable report:

"Our tonnage will be 10 per cent. greater in 1894 than it was in 1893. Competition, however, especially during the last three months,

was much stronger, and our margin of profit will be at least 25 per cent. less than in 1893. We cannot trace any bad effects to the actual Tariff bill itself, as it gives our branch of common sheets and galvanized iron ample protection. But we feel that we are sufferers, in common with every one, from its general bad effect on the community at large. We believe that we can see an improvement ahead for 1895, which, while it may not advance profits to any great extent, will at least start prices upward. Our losses this year will come entirely from the smaller trade. All of our large buyers during the entire year have almost invariably discounted their bills, a marked improvement in that regard over other years."

Another rolling mill firm, located in Ohio, state that their output of sheet iron was only about one half that of a normal year and less than one-third in dollars and cents. They anticipate a gradual improvement, however, in the present year. They offer the following pithy remarks apropos of the keen competition in the sheet iron trade:

"Speaking for the iron business—what it needs most is for the mills to get closer to the consumer, doing away with the army of brokers—don't mean the legitimate dealer who buys and pays for material, but the irresponsible genius whose stock in trade consists of a pink-eared stenographer and a roll top desk who preys on consumer and manufacturer alike."

A third concern, located in Michigan, write as follows:

"The business done by us will be, on the whole, about as it was last year. The first six months was light, but the last six months, being better than the last six months of last year, made up to some extent for the small trade of January to July this year. We have made a greater amount of goods, but the price, being lower, has left the volume of business in dollars about the same."

Southern Mills.

The mills in the Southern States seem, on the whole, to have fared far better than their Eastern and Western competitors.

A sheet iron concern in Wheeling, W. Va., report the volume of their business as having been somewhat larger than that of 1893, but not so good as in some former years. They look for an extra good business this year, on the principle that after a depression comes a great revival, and they think the late depression will prove no exception to the rule.

From a second mill in the same district we are advised of a fair average business done in 1894, under very satisfactory conditions as regards payments, customers having generally taken advantage of the system of cash discounts.

A Southern concern, manufacturing sheet iron and steel from No. 28 to No. 18 gauge, speak of having done a larger business last year than in 1893, the increase amounting to above 20 per cent. They add, however, that the margin of profit was so close that only by running full, with closest economy, could they make any profit at all. Payments with

them were better than heretofore, on account of the system of cash discounts.

The Chicago Sheet Iron Trade.

Chicago is a very large market for light sheets, both black and galvanized. Roofing and cornice makers are heavy consumers, trunk makers are by no means an insignificant factor, the stamping works are of large capacity, and miscellaneous manufacturers of small sheet wares are very numerous. The field has long been an inviting one for the manufacture of sheets, and in 1892 and 1893 two mills were built in the vicinity of the city, but for some reason they dropped out of the contest and neither of them turned a wheel in 1894, abandoning the trade to the mills in Indiana and further east. It was very certainly not a year for large profits in the manufacture of sheets. Prices fell over \$8 per ton from January to April, although the January price was much below the average of the preceding 12 months. Contracts for No. 27 common iron sheets were placed about the 1st of April at 2.20 cents, Chicago, for large lots, to be shipped from mill, and rumors were current of even lower rates having been made. But from that time a marked recovery set in, and the demand was sufficiently large to keep the mills well employed until the close of the year. An increasing preference was manifested for steel sheets by consumers generally, while in the stove pipe trade smoothly finished iron was in greater favor, owing to its considerably lower cost as compared with past years. Galvanized sheets showed the effect of the increased capacity of old works and the entrance upon the field of new ones. Occasionally during the year an effort was made to strengthen prices, but for the most part competition for business was exceedingly keen and prices were weak. The adoption of a new list on galvanized sheets early in the year was of little avail in checking the slaughter of profits. The consumption was increased locally by the rescinding of a city ordinance forbidding the construction of metal covered wooden bay windows and light shafts, but the effect on the trade was not so great as it would have been in a year of great activity in building.

The Pacific Coast.

From California a manufacturer of steel and iron sheets writes that the competition with foreign plates, No. 18 gauge and thicker, is very keen in San Francisco. The new tariff, he believes, will injure his trade in the sizes thicker than No. 18; the gain in lower rates on wrought iron, scrap or steel billets does not help him any, as domestic steel billets and scrap are cheaper. He concludes, in regard to the outlook as follows:

"The outlook for the coming year is better than for the past year. The timely rains this fall which have been general on this Coast have stimulated the hopes of everybody. A great

many irrigating schemes are likely to be consummated and this requires a large amount of light plates, Nos. 10 to 16."

Sheet Brass and Copper.

Brass and copper rolling mills have done only a fair business. Competition is referred to as being quite as sharp as in the previous year, while profits have been about the same. Manufacturers in this branch of business have had the advantage over their sheet iron contemporaries of being able to keep their works running at a fair working profit, and in some instances at a slightly better profit than formerly. The dullness in building operations during the year caused a considerable restriction in the demand for cornice copper. Some of our correspondents place the falling off in sales in this department as high as 50 per cent.

A brass rolling mill proprietor in Illinois writes that his business for the first six months of the year was much below 1893, but the latter six months brought a considerable improvement. He looks for an increase in the volume of business this year, and refers to collections as having been very satisfactory; money, he remarks, seems freer and payments come in with less urging. A similar condition is reported from New England. A correspondent in this industry, located in San Francisco, speaks of the year's trade in the Pacific Coast as having been very poor in the earlier portion, but better in the fall and since. Profits, he thinks, were slightly better, and he regards the outlook as promising a better business in that section.

Miscellaneous.

A great many trades with which the readers of *The Metal Worker* are more or less directly concerned have furnished us items that will be of assistance in summarizing the general industrial situation. From these advices we make some selections:

Hardware.

The reports from our correspondents in the hardware business are not uniform respecting the comparison of trade this year with a year ago. The majority, however, refer to a falling off in amount, the figures giving the average of about 10 per cent. Some few others have held trade even, while a lesser number report an increase. The latter, however, account for it in several cases by additional lines added to their business and by the fact that they deal in specialties which are not so much affected by hard times. The prospects for the coming year are not altogether unpropitious, according to the best opinions of our correspondents. There are, to be sure, reports prophesying evil things, but, taken as a whole, the tendency shows a belief in a brighter year. One Western firm says: "Altogether we believe that the

entire country is in better shape than for two years past." Another writes in this conservative way: "We see no prospects of better results prior to July, 1895; at least values are still falling and the building trades are not looking up." This expresses the condition of things in one of the cities of Western New York. As an offset to this, however, we have the following report from another well known firm in one of the larger cities of that section:

"The prospects appear to be better; factories and shops in the city are more fully employed than was the case this time last year. There is considerable building in progress and more that is now certain to be commenced at an early date."

In Ohio the reports are generally favorable, one firm looking for a gradual improvement, beginning with the opening of spring trade, and another being of the opinion that they will do an average trade in 1895. One New York firm have a reason for not being over hopeful of the future, for they say that "the country at large cannot grow rich on 50-cent wheat and 5-cent cotton," and the same thing is alluded to in a report from a Texas dealer, who writes:

"The abundant cotton crop that has just been marketed here sold so much lower than usual that it seems to have taught the farmers a great lesson in economy, and they have in consequence taken more money home with them than usual."

The following opinion is from a manufacturer who comes in contact with the hardware and similar trades. He writes: "Our salesmen cover the greater part of the United States and they report that the outlook for the coming year is very favorable."

Refrigerators.

The reports that we have received from this important industry indicate that the volume of trade, as a rule, was less than during 1893, the reduction averaging some 25 per cent. One of the few concerns reporting an increase in business say that early orders were small, but having built freely they had the goods ready for prompt shipment, and as a result did a larger business than usual. They remark that the demand was principally for the medium and large sizes of refrigerators. The prospects for the coming year are considered brighter than they were 12 months ago. The Western manufacturers think it will be better throughout the East and West, but in the Northwest they are looking for no great amount of trade. In a general way they consider that the demand will be fair in quantity, but they are afraid that the competition will keep prices very near to the unprofitable point. The Eastern makers are anticipating better trade, and one manufacturer writes:

"Dealers are just as reluctant as at this time last year to place orders, and those that can be induced to do so make them small. A few have carried over stocks; but, inasmuch as they had bought sparingly, these stocks will soon be

disposed of when trade opens and we believe orders will then be placed as freely as usual."

The same concern write favorably of the financial strength of the purchasing classes, saying that they have been able to make collections more promptly than usual. They add:

"If manufacturers and others insist on terms being more respected than in the past, it will tend to a more healthy state of affairs in this connection. The desirability of purchasers respecting terms, and manufacturers and jobbing houses insisting on their doing so, ought to be generally recognized."

One well known firm of manufacturers complain of the practice of dry goods and department stores handling refrigerators and selling them at little or no profit, using them as leaders and relying on their other sales for making money.

"Such stores," they write, "may be big institutions in their way, but they have more disastrous effects on trade generally and on the already insignificant wages of the American mechanic and laborer than any tariff that has yet been devised or tinkered with. We believe that any thoughtful man who spends his entire time in such a business as ours and visits the trade all over the country, as the writer does, will agree with him as to the injury that has been done to manufacturing industries and legitimate dealers by the class of stores referred to."

AN IMPORTANT CONFERENCE, called by the Welsh Tin Plate Workers' Union, was held at Cardiff on Saturday week to consider the situation in the tin plate trade. After long deliberation, the Executive Committee's report was approved, and submitted to the different branches for final decision. The report was as follows: "1. That the council should declare itself in favor of a uniform rate of wage. 2. That inasmuch as a reduction of wages of 10 per cent. below the standard of 1874 has been accepted, and is now in operation, and that further and heavier demands are made, the council, under present circumstances, strongly urge upon every body of tin platers, on no account to agree to a greater reduction than 10 per cent.; and further, to take care that no contract be agreed to extending further than the end of March, 1895. 3. That the seven districts be requested to elect one member each to act in conjunction with the 12 executive members, and that the tin plate masters be invited to appoint an equal number to form a board to deal with wages and other matters pertaining to the tin plate trade." Some of the tin plate workers in the Llanelly district have, however, expressed themselves in favor of a reduction of 15 per cent. They fear that unless the men compromise the matter and meet the manufacturers half way, most of the works will close indefinitely.

THE FAMILIAR CALENDAR of Bruce & Cook of Water street, New York, is the eighty-third annual announcement of that well known metal house. The calendar is in the customary style of decoration, and consists of a large card with the months divided into small panels and arranged each side of a picture of the warehouse of the company. Of particular interest at a time when so much is being said of the weights of tin plates is the table printed on the back giving the weight per box of tin plates of all sizes and gauges.

PLUMBING and GAS FITTING.

Review of the Plumbing Trade.

THE CLOSING MONTHS of 1894 brought encouragement to all engaged in any branch of the plumbing trade. Our correspondents in every part of the country, however, seem to agree that the volume of business was less than in 1893, when what has been termed "the panic" began. The reduction in the total amount of business done is variously estimated in some cases at as much as 40 per cent., and a general average based on these reports might safely be said to be at least 10 per cent.

One writer says: "The beginning of the year was slow, the present is better and on the increase." Another says: "Our business was materially less than in 1893, though the latter half of the year will, perhaps, show a small gain over the same period of 1893." Still another writes: "Our business is as good as it ever has been, but in ordinary times it would have doubled up."

Competition.

All have felt a sharper competition, which is reported by some to be "slimy-alasing." One says: "Competition is worse than ever before known, and in some lines cost of goods does not seem to be considered in making sales;" while another writes: "Profits are sacrificed to keep up volume of business; prices are too low in all lines of manufactured articles." A plumber reports: "Competition is sharper than ever. Many journeymen, through lack of work, have been compelled to take contracts for buildings at prices very satisfactory to the owners, the owners becoming responsible for the materials. The result is that work has been done at a lower price than is possible if association wages are paid, and a small advance is charged on the materials for a profit." A Western plumber says: "Competition is even sharper than last year. The firm that gets no work except in general competition is short of a profit, if not worse." A few report a good business, but, unfortunately, they are in the minority.

The Profits.

As a natural result, in such a depression as has been experienced throughout the country, and with the competition of the character reported, very few show any increase in profits. The majority report a reduction to the extent that only through a much larger output and a saving in the cost of production are

they able to make the year's profits foot up to the amount of former years. The reduction may be estimated, from our correspondents' statements, at as much as 10 per cent. Some say "profits are less, owing to the cutting of prices without regard to cost;" others say "less margin of profit, prices badly cut," while still others say that "while the cost of material is less, the price of goods has been reduced out of all proportion with it, so that the margin of profit is much less and in some cases gone entirely." "Profits," according to an Ohio manufacturer, "are much less than former years or last year, but he hopes to make it up by larger sales." Another manufacturer writes: "Profits are better, due to smaller orders, and more of them;" while from another source we learn: "Prices are as low as they can go, and any change must be for the better and more profit."

The New Year's Prospects.

There is a disposition on the part of many who have money that is not earning much interest to go into real estate. This is marked by the busy condition of architects' offices and of the inquiries about land and material by contractors. The benefit to be derived from this movement will come first to the plumber and then to the manufacturer of plumbing goods. That better things are expected is shown by the opinions expressed. One writer says: "For the coming year prospects seem to be brighter;" another: "Prospects are very fair, and already we feel a little improvement in business." A plumber writes: "Things look brighter;" another says: "The prospects for the coming year are good and we are very hopeful. We do not like to say too much about it, but will be disappointed if we do not increase our present footings one half." One manufacturer says: "From our inquiries we are preparing for a big year at good prices." Another says: "Things look better, money is being taken from stocks and speculation and put into real estate." Another writes: "With us prospects are A 1," and another: "A gradual improvement is expected by us, but no business of any magnitude for at least eighteen months." The prevailing impression of the situation is that the prospects are good unless some financial legislation checks the restoration of confidence that is now gaining ground.

Hard Times.

Having reached the bottom, as many of our correspondents put it, there is

no reason why "better times" should not be talked to help things along. Several have asserted that many have used the "hard times and tight money" cry who were in no way affected by them, and thus made the times harder and collections more difficult. Some houses state that the conditions for trade are better, as there has been a weeding out of men who were incompetent to manage their business in a systematic way. A general impression exists that those who are likely to buy are able to pay. There is not so much trouble reported in making collections as might be supposed. Some state that their collections have been good and that there is an increase in hand to mouth buying, with a strong effort being made to secure the benefit of cash discounts.

The Use of Better Goods.

Never before could so much be secured for the money, which has materially aided in the introduction of strictly first-class goods, where formerly buyers could not be induced to consider them on account of cost. This has also brought domestic sanitary work into a prominence that has been alike advantageous to the owner and to the tradesman. With the increased use of exposed fixtures for all purposes there has been a decrease in the use of lead and solder work. This is a source of lamentation to some of the old-school plumbers, who, though they take pride, do not find consolation in the fact that their sanitary knowledge is still looked upon as invaluable in the construction of a system of modern plumbing.

New Articles and Methods.

The year has seen the introduction of many new goods in the various branches of the trade, and improvement has made some of the standard goods of the past seem very crude in comparison with those that have taken their place. New processes and methods of manufacturing for the reduction of cost have been general. One house says: "We have made no improvements of magnitude, but have many new devices and improved designs of standard goods." Another reports: "We have made changes in our goods by cutting off needless expense in cost in material and methods of doing the work." From another: "We have made a number of improvements in our tools, so that our output of goods is increased with no more labor than formerly." Some report new things that are being held back until the market is in a better condition for buying.

Associations of Master Plumbers.

The National Association of Master Plumbers has added to its membership and accomplished some things this year for which it has persistently labored in the past. Other matters are before its Executive Committee which will be treated in a businesslike manner for the good of all who come in contact with the association. Through the intimate acquaintance of its members, effected by their national and local meetings, the trade has less trouble from cutthroat competition and have raised plumbing, as a business and a science, to the high plane to which it belongs from the important influence it has on the public health. The association has much work before it to reach the mark set by some of its members, as is shown by the following: "I would like to see a National Board established to thoroughly investigate all systems of plumbing, with a view to establishing a standard that all plumbers could follow and feel that they were safe. This would avoid the competition with the 'go as you please' systems, each one the best in the mind of the originator. I would advocate a system of inspection that would give the property owner a correct idea of the condition of the plumbing in his premises, so that existing evils could be corrected. The next move would be to have examiners to pass on the qualifications of plumbers, and determine as to their competency to practice the trade. Then, by careful inspection, the incompetent or dishonest would be kept where they should be."

Learning the Trade.

The value of the trade school is being more widely recognized, and in several cities the master plumbers' associations shorten the term of apprenticeship one year to those who possess a trade school certificate. As the result of the benefits following a course in plumbing at the New York Trade School, plumbing classes have been formed in a number of cities of smaller magnitude. There are now several such classes in connection with other educational institutions in New York City, besides those in Philadelphia and Brooklyn.

Manufacturers' Associations.

During the latter part of the year the manufacturers of plumbers' supplies in different sections of the country have formed associations which is a new subject for consideration. These different associations work in harmony with each other and meet more frequently than would be possible with one national association, yet having all the advantages of a national body. There is said to be nothing in the course of action proposed that will be antagonistic to the interests of their customers, the plumbers.

Sanitary Earthen Ware.

The increased use of sanitary earthen ware is generally noticeable, and one

correspondent says: "Where there was but 10 sanitary potteries in 1890, there are now 18 fully equipped, which has caused the selling price to come down with a jump that has affected the workmen. There is, however, no difficulty in procuring a full complement of hands to operate all of the potteries, but the demand is not for more than half of what can be produced." Vitreous earthenware is the latest pottery production to attract special attention. It is said to be perfectly non-absorbent and unaffected by changes of temperature. It is a general impression that the siphon closet is fast becoming the closet of the day for first-class work, as a better scouring and a deeper seal are secured.

Canadian Trade.

One correspondent from Canada says: "Prospects are very bright for next year and we are preparing for a larger volume of trade. The building trade expect to be busy and many large buildings are well under way." Another writer says: "As far as we can see we think we shall have a good season's trade." In commenting on the financial condition of trade the following remarks are made: "Although the complaint is general that collections are slow, we are able to collect pretty promptly in the majority of cases. There is a 'weeding out' process going on which will certainly force numbers 'to the wall,' but those left will be on a surer footing and will give a better basis to business than it has had for some time past."

The Chicago Master Plumbers.

The Chicago Master Plumbers held a meeting at their rooms, 107 Madison street, Thursday afternoon, December 27, at which there was a full attendance. The president and several committees made their reports, which were well received by those present. The election of officers for the ensuing year was the next in order, with the following result:

President, P. M. Murphy.
Vice-president, M. L. Mandible.
Secretary, J. B. Breen.
Treasurer, P. Sanders.
Sergeant-at-arms, L. A. Laison.
Executive Committee: Paul Redieske, C. J. Herbert, M. J. Corboy, J. S. Webber.

The annual reception and ball will be held at the Auditorium Banquet Hall, Wednesday evening, January 30, 1895.

BROWN & WALES, Boston, Mass., advise us that they have made arrangements with Randolph & Clowes, Waterbury, Conn., manufacturers of the Brown & Bros. Copper House Boilers, by which they are enabled to carry a stock of these well-known goods, so that all orders can be filled promptly from their Boston store. They feel confident that this will be a great convenience to dealers in plumbers' supplies as well as plumbers themselves. They state that a difficulty has been that although these Boilers were frequently specified in contracts the plumbers were not to provide some other make, owing to the fact that the Boilers could not be delivered as promptly as desired.

President Redieske's Address.

We print below the report of President Paul Redieske, of the Chicago Master Plumbers' Association, presented at the annual meeting of the association held December 27:

In presenting my annual report for the past year I will try in a brief manner to review the work of the past administration. When your officers assumed control of the affairs of the association for the year 1894, the plumbing trade of Chicago had just passed through a prosperous period. The great World's Columbian Exposition with its many magnificent productions had come to a close, but the dark cloud of distress (foreshadowed in our worthy ex-president, T. P. Culliton's, report of last year) which followed in its wake, has hung over this our great city for the past year, causing great destitution and financial loss, which a great many of our craftsmen and members were not fortunate enough to escape, but I think that I can safely say that the outlook for the future is again brightening, confidence seems to be gradually returning in all branches of business, and we may safely hope for a very prosperous spring.

After the election and at the first meeting of your Executive Committee of the past year, the first thing that was upon our mind of the members of that committee was how to bring about a more hearty spirit of sociability and good fellowship among the members, and with that end in view the committee started to arrange an entertainment and ball, the success and pleasure of which no doubt rests with your members; and by your instructions to the committee a few meetings past to arrange for another you seem to be longing for a repetition of the same.

The next question for the consideration of the Executive Committee was the arrangement of a new agreement with the journeymen, and here credit is due to the Arbitration Committee who had the question in charge, for I do not think that there ever was a committee appointed by the association since its foundation that have worked harder and more faithfully for the interests of the association than they did. For three long weeks they sat from early morning until late at night to try and come to some settlement, and, in my mind, they arrived at the best settlement under the conditions then existing.

Next came the convention, and no doubt you have all read the report and noticed thereby that the delegates that you sent to Detroit represented this association in a creditable manner. Through the hard work of the National State Vice-President, Wm. Geary, with the assistance of your last Executive Committee, the Illinois Master Plumbers' Association is now an established fact and in a very flourishing condition, the first convention being held in Peoria last June.

One of the great things which this association is trying to accomplish is the passage of a bill governing the licensing of plumbers in this State, by the incoming Legislature, and every member of this, our local association, ought to see to it that the members of the lower house, as well as the State Senators of his district, will vote for the passage of this bill.

The next question that came up was the question that has been before the association since its foundation, namely, the apprenticeship question, and great credit is due the committee that have worked so faithfully for the past three months for a final settlement of this great question, and I hope that if it is not already settled by this meeting that a final settlement will be arrived at in the near future.

Our relations with the manufacturers and dealers in the past year have been of a very harmonious nature, with the exception of one, who is now out of the good graces of the association. All differences that have been referred to the Executive Committee have received prompt attention and a speedy settlement arrived at. The question of sub contracting is now receiving attention and has been placed in the hands of an able committee, whose report you will have heard to-day.

There is another very important matter to which I wish to call the attention of this association. You have no doubt all read the interpretation of the Baltimore Resolutions by the National Executive Committee. This, no doubt, will be the leading question at the next National Convention, and upon the right disposition of the same no doubt depends the future welfare of the

national as well as all local associations of master plumbers all over the United States. Yes, I do not think that it is assuming too much when I say that the very life of the national and the local associations, as well as every master plumber's individual business all over the United States, depends upon the right disposition of these questions of trade protection.

There are a great many other questions that I might enter into, which would prolong my report and make it cumbersome, but I think it is the duty of every member of the association to be present at all the meetings, so as to know as well as the officers of the association what is going on, and to watch over the interests of the association. In conclusion, I wish to thank all the members of this association for all the kindness and forbearance shown me during the past year. Especially do I wish to thank the members of the Executive, Arbitration and Apprenticeship committees, as well as all other committees, for their promptness in attending the many meetings during the year, and for the assistance they have rendered me during the year.

TRAPS AND VENTS.

THE DIFFERENT master plumbers' associations throughout the country will soon be electing their officers for 1895. *The Metal Worker* will be glad to receive from the secretaries a list of the new officers for publication, as it is of interest for the plumbers of one city or State to know the officers of the associations away from home.

AT A MEETING of the Master Plumbers' Association of Cincinnati, Ohio, last week, the following ticket was placed in nomination: President, C. J. Nolan, J. J. Dowd, Richard Murphy, William Allison; vice-president, J. R. Gibson, Charles Atkinson; secretary, George Mellor, Jr.; Frank Hopper; treasurer, J. D. Sullivan; sergeant-at-arms, T. D. Lynn.

AT A MEETING of the Plumbers' Supply Association of New England in Boston, December 21, the following were elected officers for the ensuing year: F. J. Knox of Hartford, president; Emory F. Souther, president of the Dalton & Ingersoll Company, Boston, vice-president; W. N. Goddard of King & Goddard, Boston, treasurer, and John B. Dupee, Boston, secretary.

THE ST. JOSEPH PUMP COMPANY, St. Joseph, Mo., report that during the year they have added a two-story 30x90 foot building to their plant and have put in two boilers and a 175 horsepower engine. They have also made some substantial improvements in their line of pumps.

THE ABBENS & OTT MFG. COMPANY, Louisville, Ky., will erect a new building, 180 x 60 feet, for enameling iron bathtubs.

THE ALBERNE STONE COMPANY, 217 Lake street, Chicago, are to supply ten combination laundry tubs and sinks for the building at 416-418 West Madison street.

"OLD PEPPER" CUSHING of the Knights of Tabasco has answered the letter which appeared in the trade press from the Executive Committee of the National Association of Master Plumbers, bearing the signature of President Mitchell. "Old Pepper" takes a dignified stand in his reply, and is positive in the statement that the "Knights" are a representative body of men and above the reflection which has been made upon them.

A CHARTER was issued November 14 to the American Porcelain Company, New Brighton, Pa., for the manufacture of earthenware sinks, wash trays, &c. The capital is \$50,000, and the directors of the company are T. E.

Marshall, Frank S. Reader, J. S. Boyd and Thomas Craven of New Brighton, and S. L. Marshall of Pittsburgh. The ware is of a light brown colored body, enameled with a heavy coat of perfectly white china, giving the same effect as white clay, with the advantage, it is claimed, of being harder burned and more lustrous. We understand that this ware has been subjected to many tests with excellent results. It has been proved to be proof against crazing, and the enamel cannot be separated from the body. The company have purchased the Scott Tile Company's works in New Brighton, which they have put in complete order and equipped with new machinery. The main building is 100 feet square, two stories high, with two large kiln houses, one 45 x 85 feet, and the other 40 x 60 feet. A large warehouse and office adjoin the railroad siding, giving excellent shipping facilities.

OWEN & SALTER, manufacturers of plumbers' supplies, Buttonwood and Twelfth streets, Philadelphia, are distributing a neat little vest pocket renewable memorandum book in fancy leather covers. The inside cover pages are utilized for describing their Maelstrom closet and Faultless basin waste.

THE PLUMBING SHOP of Walter Hager, Johnstown, Pa., was destroyed by fire on December 31.

THE BUROESS SOLDERING FURNACE COMPANY of Columbus, Ohio, inaugurated on the first of the year a new feature in the sale of their soldering furnaces. It is that all cylindrical cast iron burners of their Gem furnaces are guaranteed for one year against burning out, and during the period named the company will furnish one free of charge.

THE WADSWORTH PLUMBING COMPANY have been incorporated at Cleveland, Ohio, by Frank A. Wadsworth, W. A. Wadsworth, J. B. Wadsworth, G. H. Wadsworth and H. J. Link, for the purpose of doing a general plumbing, gas fitting, steam and hot water heating and sewer building business in Cleveland.

A PETITION has been sent to the City Council of Minneapolis, Minn. for the appointment of experienced plumbers as inspectors of plumbing.

COL. GEO. E. WARING, Newport, R.I., the well known sanitary engineer, has been appointed Street Cleaning Commissioner of New York City.

THE FLUSH TANK COMPANY, Richmond, Ind., are issuing a circular of their Siphon Euduction Closet Range for schools and public buildings. The circular gives a cut of the closet set up showing the flush tank, seats, the trap and drain pipe. By means of a siphon the range of closets are said to be effectually flushed periodically, after which there is 7 inches of clear water left as a separate seal under each seat. The closets are made in sections so that the number can be increased when desired. The company are also manufacturers of the Rhoades-Williams Automatic Siphon, the Field-Waring Automatic Siphons, and the Yeteve Raw Sewage Closet Systems.

THE ANNUAL ENTERTAINMENT AND RECEPTION of the Master Plumbers' Association of New York will be held in the Lexington Opera House, Fifty-eighth street and Third avenue, on February 12. The committee having charge of the affair and the tickets are

John Yule, T. J. Tuomey, Charles Schloesser, T. J. Cummins and Milton Schnaier. Several specialists have been secured for the entertainment and the music will be furnished by a well-known orchestra.

SCRAP.

FORD & DONNELLY, Kokomo, Ind., are erecting a pickling machine of the Grey patent for the Atlanta Steel & Tin Plate Company, Atlanta, Ind., and also one of the same type for the Montpelier Tin Plate Company, Montpelier, Ind. These machines have a capacity of 45 tons per day.

ATLANTA STEEL & TIN PLATE COMPANY, Atlanta, Ind., expect to be rolling their own black plate by February 1 and not January 1, as stated last week.

A PRESS DISPATCH from McKeesport, Pa., states that the locked-out tin plate workers of the United States Iron and Tin Plate plant, at Dennmer, Pa., have inaugurated a movement to erect a \$40,000 tin plate plant. The McKeesport, Pa., Board of Trade has been invited to assist in securing a location for the plant. At a meeting of the Board of Trade a committee was selected to ascertain what inducements can be offered to the men to locate the works at McKeesport.

THE WORKMEN at the tin plate works of R. Thomas & Co., at Sydney, Gloucestershire, and Lydbrook, Herefordshire, England, have agreed to accept a reduction of 10 per cent. in their wages for three months. It is probable that the men at the Mellingriff Works, near Cardiff, in which Messrs. Thomas are interested, will follow this example.

THE BALTIMORE IRON, STEEL & TIN PLATE COMPANY, Baltimore, Md., are reconstructing and enlarging their mill, at Locust Point, near that city.

GREAT WESTERN TIN PLATE COMPANY of Chicago will have their rolling mill and tin plate works at Joliet, Ill., in operation by January 21. The company will manufacture bright coke andterne plates, as well as black sheets.

THE ELWOOD TIN PLATE COMPANY of Elwood, Ind., have filed articles of incorporation with the Secretary of State of Indiana. Their capital stock is placed at \$10,000, and the directors named are G. Samuel Allison, F. Marion Conner and Richard Howland, all of Richmond, Ind.

WE ARE ADVISED by a London cable dispatch of January 2 that a large meeting of tin plate workers was held at Llanelly last Saturday, at which it was decided to maintain the 36-box rule and refuse to accede to the proposed reduction of 10 per cent. in wages. Several Welsh tin plate works are reported as closing down indefinitely, including those of the Cynon Tin Plate Company at Aberdare, and the Upper Forest Works, at Morriston, South Wales.

PITTSBURGH TIN PLATE WORKS, New Kensington, Pa., are reported busy, having their full equipment of six tinning pots in operation. The concern are now rolling their own black plates. Their output consists of Kensington charcoal bright plates, Amber coke bright plates, and Kensington, Amber and Westmoreland ternes. The last named plate is controlled by Sidney Shepard & Co. of Buffalo and C. Sidney Shepard & Co. of Chicago.

STEAM AND HOT WATER.

Steam and Hot Water Heating Trade.

THE REVIEW of the trade which we present below was prepared for us by a prominent heating engineer, who has had every facility for studying the condition of business in this department.

General Review.

While many lines of business and manufacturing interests have suffered during the year 1894 through business depression, competition, and other causes, the heating of buildings—particularly private residences—by steam and hot water, or what has become known as the house heating industry, has advanced during the past year in appliances, methods of placing and amount of business done as compared with former years.

In addition to improvements in construction made in some of the older styles of heating boilers during the past year, a number of new constructions have been invented, patented and brought before the public, some by inventors and manufacturers who have already achieved fame and success in this line, and others by new aspirants in the field. Many of the newer constructions are but copies of older designs, from which some objectionable feature has been eliminated, or with some improvement added. In fact it would seem impossible in the present state of the art of boiler making in this country, with its hundreds of manufacturers making almost every conceivable shape and construction, to produce a house heating boiler that did not possess some of the features of the older constructions.

Types of Boilers.

Boilers are made of wrought iron, steel, cast iron, and a combination of wrought iron or steel and cast iron in one piece and in sectional form, portable and brick set, some with magazine feed and others surface burning, some with a direct draft only, others with a return flue only, and still others with both a direct draft and a return flue, with the many different circulations of water and gases and the different arrangements of surface. Plain and extended flat, rounding and corrugated drop tube. Fire box and flue surface arranged in different proportions, and when in sectional form with both the washer and screw joint, with and without manifold or drums, and with fire boxes round,

square, oblong and oval, some formed of brick and others water lined, with bases or ash pits of iron or brick and with water lined bases.

Line of Development.

The type of boiler which has possibly been more fully developed during the past year, and which is being constructed in slightly differing designs by a number of manufacturers, is the vertical sectional cast iron boiler with screwed joints, a vertical circulation of water, a horizontal fire travel, a direct draft and a return flue, each section having its own proportion of grate area, fire and flue surface, and being arranged as a surface burning boiler. Many manufacturers advocate the use of a non conducting covering on their boilers, some furnishing it as a part of their construction. This particular design has been very largely used during the past year, many of the newer constructions being of that type. Boilers with a direct draft and horizontal water ways have not been as largely sold as in the past. The older manufacturers have enjoyed a slightly increased trade, while those that have come into the field later seem to have taken up the natural increase of about 20 per cent. Prices have been firm, the only reductions being due to the reduction in cost of the raw materials entering into their manufacture.

Radiators.

Radiators have been improved in design and finish, and some new styles have been brought out. The older companies have extended and increased their trade, while a number of new companies have come into the field. Prices have been somewhat reduced, and the tendency has been to use plain rather than extended surface for direct radiation. With the growth of the steam and hot water systems mechanics in all sections of the country have become more familiar with the best methods for placing the systems; manufacturers have become more familiar with the actual capacity of their goods, and as a result we hear of fewer failures or partial failures.

Pipe, fittings, valves and other goods entering into the construction of steam and water heating apparatus have been slightly reduced in cost, making the cost of the apparatus from 10 to 20 per cent. less than in former years and thus helping to popularize the systems.

Steam and Hot Water.

As near as can be ascertained by inquiry among boiler and radiator manu-

facturers the percentage of steam apparatus placed during the past year has been about 60 per cent., while hot water apparatus has been about 40 per cent. of the total production. The present indications are that 1895 will show a marked improvement and a still further increase in the number of steam and water heating apparatus placed and we are also promised some new designs of boilers.

Opinions of the Trade.

Following after the review of the steam and hot water heating trades, it will not be without interest to quote from some of the reports that we have received from representative houses in different parts of the United States. It is pleasurable to note that the general feeling is that the future will not be without comfort to those who long for better business. A prominent manufacturer writes that he thinks the prospects for the coming year are very favorable, and adds the encouraging statement that the financial strength of the purchasing classes was, in his opinion, a great deal better in 1894 than in previous years. Another large firm in the East write:

"We think the prospects for the coming year are more hopeful, since there is evidence of more building and general business, and there are preparations for doing something."

The same firm, when asked for their opinion of the effect of the new tariff on their business, replied, "D—the tariff." This may not be the most elegant way of expressing one's sentiments, but we have no doubt that it reflects the opinion of very many people who are longing for the time when the agitation of this agitating subject shall have ended.

A prominent steam fitting concern of New York City believe the prospects are very fair as to the volume of business, but think the future holds out little hope of any improvement in profits. A radiator manufacturer writes:

"The steam fitters, so far as we have come in contact with them, expect a good trade in 1895, owing to more and larger building enterprise; hence we look also for increased trade next year."

A conservative firm, writing from Philadelphia, say:

"We think the prospect promises a light business for a few months of the coming year, but hope for an improvement before the end of next year."

A prominent heating engineer, who has been connected with the business for many years, writes us from one of the large Ohio cities:

"The prospects for the coming year I consider favorable, but think that next year will witness a greater reduction in profits in all classes of work, and also a reduction in wages paid to labor."

A well-known firm of New York contractors expressed the following opinion:

"Unless business improves and better prices are obtained it is our opinion that it is only a question of time when many parties now in business will be obliged to discontinue. Only strong firms can stand a continued pressure like that of the past year."

As a closing quotation we print an opinion from the president of a well-known firm of steam engineers and contractors whose reputation has extended far beyond the New England States. Our correspondent writes:

"For the last six months we have seemed to be going through a long tunnel on a level grade. This tunnel apparently has a curve in it so we can't see through, and consequently we don't know whether we shall come out into daylight in three months or three years."

National Fitters' Association.

Increased activity has been shown by the National Association of Master Steam and Hot Water Fitters of the United States since the annual convention in New York last June. At the convention a number of interesting papers were read by its members, and an English engineer, David M. Nesbit, a guest of the association, also presented a paper. The Executive Committee have held regular meetings, an important one having been held on September 30, when what is known as the "Trade Resolutions" were passed. The deliberations of the Executive Committee have been issued to the members in the form of a bulletin that they may know just what is being done in their interests.

New Associations.

During the year two new associations have been formed that are of interest to the heating trade. One is the Association of Boiler Manufacturers formed in New York and which recently held a meeting in Detroit. This organization has considered its affairs of no public interest and its business has been transacted in private.

The American Society of Heating and Ventilating Engineers is a newly formed association that already includes many prominent members of the trade and gives promise of a successful career. A preliminary organizing meeting was held during the fall and officers were elected to serve until the first regular convention, which will take place in New York on January 22.

Another association, or rather set of sectional associations, has been formed by the manufacturers and jobbers of supplies which has excited a com-

ment, though it is claimed that its objects do not conflict with the interests of the trade.

HEATING NOTES.

THE SOUTHERN HEATING COMPANY, Louisville, Ky., whose incorporation was noticed in *The Metal Worker* of December 15, are representing the following concerns: J. H. McLain Company, Canton, Ohio; Buffalo Forge Company, Buffalo, N. Y.; Powers Regular Company, Chicago, Ill., and the Dean Steam Pump Company, Holyoke, Mass. The Southern Heating Company, we understand, are desirous of receiving catalogues, price-lists and discounts of all goods in their line.

THE THRO, JACOBS COMPANY, 72 and 74 Market street, Chicago, engineers and contractors for steam and hot water heating apparatus, have been succeeded by the Charles H. Simmons Company. Charles H. Simmons is president and treasurer, C. M. Simmons is secretary, and W. H. Finney is general manager. The management of the company thus remains unchanged, still being under the care and supervision of Charles H. Simmons, who has practically had charge and control from the time of the company's inception ten years since. The company assure their patrons that their facilities for doing business are to be better than ever, keeping up the reputation of the concern for progressiveness. It is their aim to make each job of heating better than any that preceded it. The company have just issued a very neat pamphlet giving a list of architects and owners for whom they have furnished their improved heating apparatus.

WRAY, WENTZEL & ROBINSON, Bellwood, Pa., who recently purchased the plant of the Robinson Company, are issuing a four page circular of the Popular hot water fire place, printed in red and blue ink on fine paper. The first page shows a general view of the fire place and the second page gives a horizontal section, showing the grate bars, the water section and the air spaces. The third page shows a vertical section of the fire place set, with outside air supply, two hot air registers, expansion pipe and flow and return pipe to two radiators. The fourth page illustrates a cottage and plans with the fire place arranged for heating four rooms. Between the illustrations the text describes the apparatus.

WE HAVE RECEIVED from the A. A. Giffing Iron Company, Jersey City, N. J., a bound copy of their "M" catalogue. The book contains several new features showing the Bundy Renaissance radiator, the Elite and Columbia radiators, with top box, base, corner and grouped in all heights. The Bundy Newport radiator, like the Climax, except that it has three barrels instead of two, is also illustrated. The new Bundy giant pipe hanger and the Bundy steam return and tank traps are shown, likewise the Power regulators and the Major elastic couplings, Bundy comfort foot rests and other specialties. The catalogue is of convenient shape and well printed.

THE EXECUTIVE COMMITTEE of the National Association of Master Steam and Hot Water Fitters of the United States are sending from the headquarters in the Cable Building, New York, Official Bulletin No. 5. The feature of this bulletin is the comments on the action of the recently organized

supply associations, which action is construed to be opposed to the Trade Resolutions passed on September 20. The bulletin contains a resolution passed by the Eastern Supply Association, a letter in reference to it by John Mitchell, president of the National Association of Master Plumbers, and a letter from the Henry McShane Mfg. Company. The bulletin announces that there are 450 houses manufacturing goods used by its members, of which 126 have expressed themselves in accord with the Trade Resolutions. A full list will be printed and sent to the members in a later bulletin.

THE SCHEDULES in the assignment of Richard M. Johnson and George G. Morris (Johnson & Morris), dealers in steam heating supplies, at 239 and 241 South Fifth avenue, New York, state liabilities \$32,810, nominal assets \$42,900, actual assets \$37,159.

THE CITY COUNCIL of Circleville, Ohio, has passed an ordinance granting the franchise to the Circleville Steam Heating Company, to lay steam pipes in the streets for furnishing heat and power to the citizens. Work on the plant is to begin June 1, 1895.

A NEW CIRCULAR is received from the March-Brownback Stove Company, Pottstown, Pa., showing two views of their Crown water heater. It is of the dome type, with vertical circulation, and has a return flue. It has a 16 inch fire pot and is rated to carry 350 feet of radiation. The circular also gives a table as a guide for calculating the radiation required for buildings.

THE DWYER PLUMBING & HEATING COMPANY of St. Paul, Minn., with a capital stock of \$20,000, have filed articles of incorporation with the Secretary of State. The incorporators are John J. Dwyer, Patrick H. Smith and John J. Bailey.

THE AMERICAN BOILER COMPANY will be represented in Illinois by Charles H. Straw, whose headquarters will be at Danville. T. J. Ryan of Milwaukee will represent the above company in Iowa, with headquarters at Des Moines.

THE MORTON TIN PLATE COMPANY, Cambridge, Ohio, started their plant on Wednesday, the 26th ult. These works, which consist of three hot mills, three cold mills and a complete equipment for producing black plates, have been previously described in the columns of *The Metal Worker*. The exceptional circumstances which favored the company during the construction period have continued. During the first three days of operations nearly 50 tons of plates of the best quality were rolled, and it is expected that shipments will commence during this week at the rate of 20 to 25 tons per day. In explaining their action in starting their mills upon a union basis, the company state that while there is little if any apparent margin for profit, they decided to pay the Amalgamated Association scale of wages in preference to incurring the trouble and expense of training inexperienced men, available non-union men not being of a desirable class. The plant was put in operation just four months and six days from the date on which ground was broken.

UNITED STATES IRON & TIN PLATE MFG. COMPANY, Dennmer, Pa., expect to have their full complement of 12 tinning sets in operation by next week.

TIN PLATES.

Tin Plates in 1894.

THE PAST YEAR has not been one on which the tin plate trade can look back with any great degree of satisfaction. The trade shouldered its full share of the general business depression which prevailed throughout the United States, and was, moreover, under the spell of disturbing influences peculiar to itself, in the shape of tariff changes and labor difficulties, which will stamp the year 1894 as one of exceptional severity as regards this department. Until the final passage of the Wilson Gorman tariff law, in the middle of August, the trade was hampered and agitated by uncertainty respecting the proposed change in the tariff. When the new law was passed, reducing the duty on tin plates after October 1 from 2.2 cents to 1.2 cent's per pound, sales dropped down to very small proportions. Consumers postponed buying beyond the limit of their current needs until they could take advantage of the expected drop in prices which would follow the changed duty, and the trade, for a month, was absolutely stagnant, so far as imported plates were concerned. After the opening of October prices of tin plates underwent a sudden drop, and a somewhat active demand sprang up, which was not, however, as extensive, either in volume or duration, as had been looked for. After a few weeks the trade relaxed into a condition of comparative dullness, which continued until the close of the year.

Reduced Consumption of Plates.

The fact that some of the largest consumers of tin plates closed their factories for a part of the year, and that about all ran them on a restricted scale, necessarily caused a material reduction in the value of tin plates used. The canning industry also passed through a year of unusual dullness, and the demand from this constituency has very largely contracted. Moreover, the inactivity in the building trades was reflected in a considerable decrease in the demand for roofing plates. To such an extent was this falling off felt that the importation of terne almost ceased for a time, the requirements of the roofers being fully met by the American manufacturers. After the new tariff became operative, however, Welsh roofing plates again made their appearance on the market, and a number of the smaller American "dippers,"

who had been turning these plates out in good quantities, were forced to close down their works altogether.

The Jobbing Trade.

The smaller consumers of both bright and terne plates have been supplying their wants throughout the year in a hand to mouth fashion, taking only such quantities of material as they required for actual use within a very short time, keeping no stocks at all, and expecting every time to be able to make their next purchase at a cheaper rate than the last—an expectation which has been usually justified by the event, the course of prices having been steadily downward from month to month. This peddling method of buying, involving frequent repetitions of orders, caused a kind of spurious activity among the jobbing trade, keeping them generally busy, but with a resultant aggregate of sales far below the volume generally secured with less effort. Altogether the reduced consumption of tin plates in the year just closed must have been very considerable. One of the largest dealers in this city places the falling off at 20,000 tons as compared with 1893—itself a dull year—and 40,000 tons as compared with 1892. The following table, furnished us by the firm referred to, shows a gradual dropping since 1890:

Estimated Consumption of Tin Plates in the United States.

	Tons of 2240 pounds each.
1890.....	323,000
1891.....	315,000
1892.....	300,000
1893.....	290,000
1894.....	280,000

The falling off has been most marked in the Eastern States, judging by reports received by us from importers and jobbers. A large firm of importers and dealers in New England place their decrease in the volume of sales at 40 per cent., as compared with the past two years. Another jobbing house in the same section state that their business from January to July was 20 per cent. behind, while from July to December it was between 10 and 15 per cent. less than that of 1893.

An Eastern firm, doing a large tin plate business, report that the volume of their business in the first half of the year was very largely behind that of the previous year, but that in the last half it was a little ahead, the total for the whole year being materially behind that of 1893.

This jobbing house refer to their business as showing a decrease of 10 per cent., owing, however, to lower prices, and not to a reduction in the volume of sales. A large Chicago concern also

place their loss in trade at 10 per cent., while yet another in the same city state that their output was materially increased, while the gain in dollars and cents was practically the same as in the previous year.

Competition is generally referred to, both by manufacturers and dealers, as keener than ever, especially in foreign plates, while the margin of profit is uniformly reported to be much less than a year ago.

Prices.

Prices of Welsh plates have been gradually dropping during the year. When the new duty was imposed, on October 1, a sudden drop of from 75 to \$1 a box occurred, and a further slight decline has developed since that time. IC, 14 x 20, coke tin plates of Welsh make, which, on January 1, 1894, were quoted in large lots at \$5.35 a box, are now quoted at \$4, and the end does not seem to be yet, although the lowest prices ever known have been long ago reached. American made tin and terne plates have generally followed suit in the reduction in price, but not to the same extent as the foreign material.

The Outlook.

As regards the prospects for tin plates in the present year, the views of the trade are generally hopeful for a greatly improved business. The impression seems to be that this improvement may not occur at once, but is likely to develop gradually in the course of the year as the existing wage difficulties on both sides of the Atlantic are straightened out.

On this subject a Boston house writes as follows:

"It seems to us the prospects for 1895 are much more promising than they were for this year. We judge largely by the condition the manufacturers seem to be in, which appears to be one of great activity, although we have not as yet felt the effects of it ourselves. We think that since the change in the tariff on October 1 the demand for tin plates has increased and it seems liable to still further advance."

Another firm in the New England States allude to the effect of the new tariff as likely to be favorable as regards tin plates. "As the rate of duty is now fixed for a time," they say, "and American makers know what it will be and are increasing their output, the effect will be, we think, to increase the sales of American and reduce those of foreign plates."

From Columbus, Ohio, a leading tin plate firm write on the outlook in that city as follows: "Good, very good.

Half our trade is from this city and we know local demands will increase gradually, though prices, we believe, will be low." This opinion is supported by one of the largest New York importing houses, who anticipate a large business in 1895, but at close margins.

A Pittsburgh concern, doing a large business in that district, write: "We look forward to a very prosperous year. Here in Pittsburgh there is every indication of a large amount of building, and of a substantial kind. This will, of course, cause a greater volume of business in our line of roofing plates."

Chicago correspondents are more conservative in their estimates. One looks for only "a moderate improvement over 1894;" and another "hopes for a gradual improvement," but anticipates "no material increase for the next two years."

The new tariff, by lowering the cost of tin and terne plates, is generally held by jobbers to promise an increase in the consumption and consequently in the demand.

Collections and Credits.

Collections are generally reported as having been very fair. Many consumers, with poor facilities as regards cash and credits, have been obliged to withdraw from the field, and the balance have so well realized the need of conservative action that they have, as a rule, gotten their affairs in better shape than heretofore, and have been able to pay more promptly. In the West this appears to be especially the case. A Chicago house, doing a large jobbing trade in tin plates, say that their customers are, as a rule, in good condition to purchase and pay promptly for goods. The weaker concerns have been weeded out during the stringent times, and a safer trade is looked for.

On this head a Cleveland jobbing concern write as follows:

"We feel that our accounts contracted from now on, in fact, contracted for some time back, are safer than they would have been had we not had the severe depression. All buyers are more conservative, purchasing only what they actually need from month to month, which seems to enable them to meet their bills more promptly. Then the depression has weeded out a good many weak concerns."

And an old established Indianapolis firm of dealers refer to their collections as being greatly improved, 15 per cent. more of their customers discounting their bills than formerly. Their losses from bad debts, they add, were less last year than in any previous year.

In New York City and the Eastern States generally collections are reported to be fully as good, if not better, than formerly, owing possibly, in a measure, to the fact that stock and wages are so reduced that it does not require as much capital to pay for running expenses.

The Domestic Industry.

The growth of the American tin plate manufacturing industry during the year has been phenomenal, despite the repressive effect of a reduced tariff. The quarterly lists of the American works printed in *The Metal Worker*, and the long table of brands of American tin and terne plates now on the market, published herewith, will give some idea of the magnitude of this comparatively young native industry. During the last period for which official reports have been published—namely, the fiscal year ending June 30, 1894, the output of the American works was slightly under 140,000,000 pounds of commercial tin and terne plates. In the third quarter of last year the ratio of increase was undoubtedly proportionately greater, but the labor troubles, following on the reduction of duty on October 1, and the consequent cutting down of wages by the manufacturers, increasing the general closing down of the works, largely restricted the home production during the last quarter of the year.

The wage controversy between the manufacturers and the workmen is still unsettled, in spite of numerous efforts to effect an agreement, and the breach appears wider than ever. A number of the largest mills have already started up on a non union basis and others are preparing to do so. At the end of the year the output was generally increasing again, and it is likely that this quarter will exhibit a further increase in the aggregate output, as several large new mills, now building, are expected to commence operations within the next three months. The industry has taken so firm a hold in this country, and so much capital has been already sunk in it, that it is bound to override all obstacles and forge its way ahead, in spite of foreign competition and temporary impediments in the matter of wages and tariff.

New Works and Extensions.

The additions made to the list of American tin plate mills during the past year have been very numerous. Some of the new works are of the first magnitude, and all are provided with the most modern improvements in the way of tinning machinery and labor-saving apparatus. Probably, at this time, America can show some of the most completely equipped tin plate mills in the world. A few of the smaller dipping plants have gone out of existence as a result of adverse tariff legislation, but the larger works of that kind have stood to their guns and are still turning out large quantities of tin and terne plates, having continued in operation even when the works attached to rolling mills were closed down. None of the larger concerns, notably those manufacturing their own black sheets, which form, of course, the backbone of the industry, have gone out of exist-

ence. A large number of concerns have increased their size and capacity by the erection of larger buildings, or by the provision of additional rolling mill or tinning machinery. Some of the original works have been remodeled, in order to adapt them more fully to modern requirements, and a few dipping works have added rolling mills to their plants.

A new and satisfactory feature in the industry is found in the fact that a number of iron making firms have put up or are now building tinning works as an adjunct to their mills. Such has been the case with the *Etna Standard Iron & Steel Company*, at Bridgeport, Ohio; the *Canonsburg Iron & Steel Company*, at Canonsburg, Pa.; *Hughes & Patterson*, at Philadelphia; the *Old Dominion Iron & Nail Mfg. Company*, Richmond, Va., and *Lalanc & Grosjean Mfg. Company*, at Harrisburg, Pa. Among the most recent large plants are those of the *Morton Tin Plate Company*, Cambridge, Ohio; the *Irondale Steel & Iron Company*, Midletown, Ind.; *Montpelier Sheet & Tin Plate Company*, Montpelier, Ind.; the *Britton Rolling Mill Company*, Cleveland, Ohio, and the *Atlanta Steel & Tin Plate Company*, Atlanta, Ind., all of which are on the most extensive and substantial scale.

At the present moment some six or eight large tin plate mills are being erected, including those of the *Beaver Tin Plate Company*, New Lisbon, Ohio; *Crescent Sheet & Tin Plate Company*, Cleveland, Ohio; *Globe Tin Plate Company*, Newcastle, Ind.; *Goldsmith & Loewenberg*, New Kensington, Pa.; *La Belle Iron Works*, Richmond, Va., and the *National Tin Plate Works*, Anderson, Ind. All these new works are expected to be in full operation within the next six months, and they will form a very strong addition to the productive capacity of the country.

Quality of American Plates.

The American works are producing both tin and terne plates in all sizes and grades, of a quality equal, and in some instances very superior, to those imported from abroad. The home consumers are becoming largely convinced of the merits of the native plates, and—particularly in the West—are reported to be discarding the use of the foreign article entirely. The American roofing plates have for some time past firmly established their reputation. Many brands of these plates are now almost as well known throughout the United States as the old Welsh standard brands. The bright plates are now coming more and more to the fore, and are by degrees displacing the Welsh material in certain sections.

Views of Manufacturers.

In regard to the outlook for the American tin plate industry, we present herewith extracts from some of the re-

(Continued on page 44.)

List of American Manufacturers of Tin and Terne Plates and Their Brands.

JANUARY 5, 1895.

[illegible]

Alphabetical List of Brands of American Tin and Terne Plates

* Preparing to make black plates.

BRIGHT CHARCOAL PLATES.

Name of Brand.			
Atlas	Atlas-Standard Iron & Steel Co.		Maker.
Arrow	Black Diamond Tin Plate Works.		
Atlanta	Atlanta Tin Plate Co.		
Belmont	Old Dominion Iron & Nail Works.		
Black Diamond	Black Diamond Tin Plate Works.		
Brilliant	N. & G. Taylor Co.		
Brilliant Best Buckeye	Britton Rolling Mill Co.		
Brown's Buckeye	Neuer Bros. Co.		
Century	Phillips Tin Plate Co.		
Cherokee Bright	Philadelphia Iron & Tin Plate Works.		
Colonial	Gumney, Spiering & Co.		
Crane	Irondale Steel & Iron Co.		
DB			
Dorchester	The Morewood Co.		
Elywood	American Tin Plate Co.		
Florida	Merchant & Co., Incyd.		
Galactic	Neuer Bros. Co.		
Golden	St. Louis Stamping Co.		
H. & P. Best Bright	Philadelphia Iron & Tin Plate Works.		
Horse Shoe	Black Diamond Tin Plate Works.		
Imperial	Wallace, Bangfield & Co., Ltd.		
Iron Plate	John Hamilton.		
Ivy	The Morewood Co.		
Jack	Philadelphia Tin Plate Works.		
Kensington	N. & G. Taylor Co.		
London	Gumney, Spiering & Co.		
Mars	N. & G. Taylor Co.		
Merion	Mercantile & Co., Iron.		
Miterva	Mortimer & Co.		
Morton	Morton Tin Plate Co.		
Neptune	Gumney, Spiering & Co.		
New Castle Best Palm	New Castle Tin Plate Co.		
New Castle Pure Charcoal	New Castle Pure Charcoal		
New Castle S. Charcoal	New Castle S. Charcoal		
Oak	Phillips Tin Plate Co.		
Palm	Mercantile & Co., Incyd.		
Pine	John Hamilton.		
Princess	Black Diamond Tin Plate Works.		
Peerless			

BRIGHT COKE PLATES.

Atlanta	Atlanta-Standard Iron & Steel Co.
Almond	N. & G. Taylor Co.
Amherst	Pittsburgh Tin Plate Works.
Atlanta	Atlanta Tin Plate Co.
B	Black Diamond Tin Plate Works.
Belleveue	Old Dominion Iron & Nail Works Co.
Belona	Monroe Bros. Co.
Brooklyn	Britton Rolling Mill Co.
Calumet	Meurer Bros. Co.
C	
Crane	Irondale Steel & Iron Co.
Elwood	American Tin Plate Co.
Flint	Canonsburg Iron & Steel Co.
Glady's	Phillips Tin Plate Co.
Guersey	American Tin Plate Co.
Leslie	Merchand & Co., Incop.
Locust	Baltimore Steel, Iron & Tin Plate Co.
Menest	N. & G. Taylor Co.
New Castle	New Castle Tin Plate Co.
New Castle Palm Coke	Griffin & Cadwallader.
Pechina	John Hummel.

INTERNE PLATES.

[illegible]

Richmond, Va.....	2	2	4	Belle Isle, Belmont.....	Bellevue, Belona.....	Alameda, Chesapeake, Green Briar, Indian, Kanawha, Potomac, Rivanna, York.....
Philadelphia, Pa.....	3	3	No.	Century, Oak.....	Clady, Walnut.....	Elziver, End, Madison, Sharon, Trotter's, American New Method, Fibert, National, Phillips' Roofing, Republic, Waldo's Roofing, Zero.....
Philadelphia, Pa.....	5	6	No.	Kensington.....	Amber.....	Amber, Kensington.....
New Kensington, Pa.....	6	6	Yes	Record Charcoal A, Record Charcoal B.....	Record Coke.....	Acme, Alta, Extra Fine S. G., S. L. S. Old Process, Boaz.....
Pittsburgh, Pa.....	2	1	No.	Record Charcoal A, Record Charcoal B.....	Steel Coke.....	Acme, Alta, Extra Fine S. G., S. L. S. Old Process, Boaz.....
St Louis, Mo.....	17	Yes	Grade, St. Louis.....	Almond, Locust Mint.....	Ironstone.....	AAA
St. Louis, Mo.....	3	3	No.	Somerbrook, Somerton.....	Almond, Locust Mint.....	AAA
Somerton, N. Y.....	3	3	Yes	Brilliant, Indolent, Royall.....	Almond, Locust Mint.....	AAA
Tin Plate Works.....	20	No.	No.	Brilliant, Indolent, Royall.....	Almond, Locust Mint.....	AAA
Taylor (N. & G.) Co.....	20	No.	No.	Brilliant, Indolent, Royall.....	Almond, Locust Mint.....	AAA
New York, N. Y.....	12	6	Yes	U. S. Bright, Versalles, Yonghio-gheny.....	Almond, Locust Mint.....	AAA
Dennler, Pa.....	12	6	Yes	U. S. Bright, Versalles, Yonghio-gheny.....	Almond, Locust Mint.....	AAA
United States Iron & Tin Plate Mfg. Co.....	12	6	Yes	U. S. Bright, Versalles, Yonghio-gheny.....	Almond, Locust Mint.....	AAA
lrendate, Ohio.....	10	7	Yes	Ironstone.....	Almond, Locust Mint.....	AAA
Wallace, Banfield & Co., Ltd.....	10	7	Yes	Ironstone.....	Almond, Locust Mint.....	AAA

Excelsior.....	Mourer Bros. Co.	Scott's Extra Coated.....	Follansbee Bros. Co.
Extra Fine.....	S. G. Louis Stamping Co.	S. G.....	St. Louis Stamping Co.
Filbert.....	Philips Tin Plate Co.	Sheldon.....	Philadelphia Tin Plate Co.
Flag.....	Gumme, Spiering & Co.	Sherwood.....	Follansbee Bros. Co.
Flushing.....	Mourer Bros. & Co.	S. L. S., Old Process.....	St. Louis Stamping Co.
Freeport.....	Laufman Tin Plate Co.	Solo.....	Duquesne Tin Plate Works.
F. W. B.....	The Morewood Co.	Special Extra Coated.....	Merchant & Co., Incp.
Genuine Old Style.....	N. & G. Taylor Co.	Spruce.....	N. & G. Taylor Co.
Globe.....	N. & G. Taylor Co.	Standard.....	Mourer Bros. Co.
Grace.....	Mourer Bros. Co.	Superior.....	Merchant & Co., Incp.
Greenbrier.....	Old Dominion Iron & Nail Works Co.	Tandem.....	A. A. Thomson & Co.
Hamilton's Best Re-Dipped.....	John Hamilton	Tarn.....	N. & G. Taylor Co.
Hard Coated.....	Merchant & Co., Incp.	Taylor Roofing Tin.....	A. A. Thomson & Co.
Hazlewood.....	John Hamilton	Thomson's Puritan.....	Follansbee Bros. Co.
H. C. B.....	The Morewood Co.	Thurso.....	Laufman Tin Plate Co.
Hercules.....	Gumme, Spiering & Co.	Tip Top.....	
Hickory.....	Merchant & Co., Incp.	Trotter's American New Method.....	Philadelphia Tin Plate Co.
Horse Shoe.....	Black Diamond Tin Plate Works.	Trotter's Roofing.....	
H. & P. Re-Dipped Roofing.....		Trotter's Special.....	
H. & P. Best Roofing.....	Philadelphia Iron & Tin Plate Works.	Triumph.....	
Huron.....		Triumph Old Style.....	Follansbee Bros. Co.
Indian.....	Old Dominion Iron & Nail Works Co.	U. S. Eagle.....	
Indiana.....	American Tin Plate Co.	U. S. Grant.....	United States Iron & Tin Plate Mfg. Co.
Iron City.....	Duquesne Tin Plate Works.	U. S. Monogram.....	
Irontide.....	Valance, Arnold & Co., Ltd.	U. S. Redipped.....	
Irvine.....	American Tin & Terne Plate Co.	Venus.....	Gumme, Spiering & Co.
J. H. R.....	The Morewood Co.	Waldo's Roofing.....	Philips Tin Plate Co.
Juniata.....	New Castle Tin Plate Co.	Willard.....	N. & G. Taylor Co.
Kanawha.....	Old Dominion Iron & Nail Works Co.	X. L. C. R.....	Gumme, Spiering & Co.
Kensington.....	Pittsburgh Tin Plate Works.	York.....	Old Dominion Iron & Nail Works Co.
Kenton.....	Follansbee Bros. Co.	Zero.....	Philips Tin Plate Co.
Kilbuck.....	John Hamilton		
Knottall.....	N. & G. Taylor Co.		
Laufman's Apollo.....	Laufman Tin Plate Co.		
Laufman's Roofing Tin.....	P. H. Laufman & Co., Ltd.		
Laurel.....	Black Diamond Tin Plate Works.		
Leatherwood.....	Morton Tin Plate Co.		
Leominster.....	Gumme, Spiering & Co.		
Liberty.....	American Tin Plate Machine & Mfg. Co.		
Lindfield.....	Follansbee Bros. Co.		
Lionel.....	John Hamilton		
Lulu.....	Philadelphia Tin Plate Co.		
Madison.....	N. & G. Taylor Co.		
Maple.....	Merchant & Co., Incp.		
Merchant's Old Method.....			
Merchant's Roofing.....	American Tin Plate Machine & Mfg. Co.		
Merion.....	Mourer Bros. Co.		
Mingo.....	American Tin Plate Machine & Mfg. Co.		
Mingo Old Process.....	John Hamilton		
National.....	Philips Tin Plate Co.		
Neville.....	Follansbee Bros. Co.		
New Castle Old Method.....	New Castle Tin Plate Co.		
Newcastle Palm.....	Griffiths & Cadwallader.		
N. F.....	Follansbee Bros. Co.		
Oakmont.....	A. A. Thomson & Co.		
Old Colony.....	N. & G. Taylor Co.		
Old Method.....	Philadelphia Iron & Tin Plate Works.		
Oneyda Roofing.....	Griffiths & Cadwallader.		
Optimus.....	Follansbee Bros. Co.		
Orbit.....	John Hamilton		
Oseola Old Style.....	Merchant & Co., Incp.		
Palm.....	American Tin Plate Machine & Mfg. Co.		
Pencoyd.....	Philadelphia Tin Plate Co.		
Pennlyn.....	Philips Tin Plate Co.		
Pennsylv Old Method.....	Gumme, Spiering & Co.		
Philips' Roofing.....	Cincinnati Corrugating Co.		
Phoenix.....	Pittsburgh Bros. Co.		
Pioneer.....	Old Dominion Iron & Nail Works Co.		
Piqua.....	The Morewood Co.		
Pittsburgh.....	Gumme, Spiering & Co.		
Potomac.....	Black Diamond Tin Plate Works.		
P. T. L.....	Follansbee Bros. Co.		
Pullman.....	Philips Tin Plate Co.		
Quaker City.....	Old Dominion Iron & Nail Works Co.		
Raymond.....	American Tin Plate Machine & Mfg. Co.		
Republic.....			
Rivanna.....			
Sanatoga.....			

Dealers' Special Brands.

BRIGHT CHARCOAL PLATES.

Name of Brand.	Dealer's Name and Address.
Home.....	Canton Steel Roofing Co., Canton, Ohio.
Mohawk.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
P. S. G.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Silver Star.....	Canton Steel Roofing Co., Canton, Ohio.
Tower.....	

BRIGHT COKE PLATES.

Glanshire.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
Osborn.....	J. M. & L. A. Osborn, Cleveland, Ohio.
W. B. B.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
Yale.....	Canton Steel Roofing Co., Canton, Ohio.

TERNE PLATES.

Buffalo Best.....	Sidney Shepard & Co., Buffalo, N. Y.
Coe O. S.....	Jas. A. Coe & Co., Newark, N. J.
C. S. R. Canton.....	Canton Steel Roofing Co., Canton, O.
C. S. R., Fargo.....	
Dunlap's Domestic.....	John Dunlap & Co., Pittsburgh, Pa.
Dunlap's Double Dipped.....	
Eureka.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Furman.....	C. Sidney Shepard & Co., Chicago, Ill.
Golden Star, Old Style.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Ironquois.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
J. L. O. A. Osborn.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Kenwood.....	C. Sidney Shepard & Co., Chicago, Ill.
Lion.....	Geo. E. Merry, New York.
Osborn's Old Process.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Niagara.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
Oneyda.....	Jas. A. Coe & Co., Newark, N. J.
Osborn.....	
Osborn Roofing.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Pawnee.....	Hibbard, Spencer & Bartlett, Chicago, Ill.
Petrel.....	Bruce & Cook, New York.
Seneca.....	Sidney Shepard & Co., Buffalo, N. Y.
Snow Drop.....	Jas. A. Coe & Co., Newark, N. J.
Star.....	J. M. & L. A. Osborn, Cleveland, Ohio.
Star.....	C. Sidney Shepard & Co., Chicago, Ill.
W. T. R.....	Bruce & Cook, New York.

(Continued from page 41.)

ports with which we have been favored by the domestic manufacturers:

An Ohio manufacturer writes as follows:

"As the wage question in tin mills has not been settled, the prospects of doing business in the early part of the new year are not promising. We think, however, that there will be a fair amount of business by spring, increasing as the year grows older, provided capital does not get scared at the agitation of new financial schemes. We do not anticipate having what we call 'good business' until some time during '96, and possibly not until '97 has shown its colors. The improvements in tin plate manufacture, that is 'individual improvements,' have been minor. Being a new industry, improvements have been general, more especially in general arrangement, concentrating the different departments to save labor as much as possible, and thus lessen cost of production."

An Eastern manufacturer gives it as his opinion that business in his line in the early spring will be very brisk. The new tariff, he remarks, has somewhat demoralized the industry, as

Welsh competition is giving the manufacturers all they can do to hold their own, but this difficulty they expect to overcome in time. He adds that he is continually experimenting in order to reduce costs, and has been able during the past year to do so in several directions.

A manufacturing firm in Philadelphia remark:

"The tariff has had the effect of reducing prices and, what is worse, bringing in inferior plates of every conceivable weight except the standard. It has also stimulated us to put in more improved machinery by which we can meet the reduction."

In regard to the outlook for American tin plates, the writers say:

"We consider the prospects for 1895 very favorable, for the reason that the brands of American plates are becoming better known and are being ordered in increasing quantities in preference to foreign. This being so, especially for the last six months, we naturally look for a still greater improvement in this direction, as the foreign article is certainly deteriorating in quality and finish to meet competition."

An Ohio concern manufacturing bright tin plates write to the following effect:

"We have spent six weeks visiting our trade and getting the pulse of business, traveling nearly 5000 miles during that time, and having interviews with some of the foremost business men of the country. The generally hopeful feeling of the trade is apparent in almost every direction, although every one is feeling that profits are not commensurate with the efforts that are required to obtain business; nevertheless, there is a larger volume of business than heretofore, and every one feels, as far as our observation goes, that the coming year offers a much more hopeful outlook than a year ago. The cost of production to manufacturers, while it has been reduced by lower material, yet there is a demoralizing condition of the market which has caused a much greater decline in the price of their production than the cost would warrant, and we feel that if trade recovers there must be a reaction, to a certain extent, in the recovery of prices, though that may be some time in the future. There is one point that is largely against the manufacturers of tin plate in this country, and that is the co-operation of the steamship lines

with our railroads, making Western deliveries almost on a par with seaboard deliveries. The Detroit, Chicago and Western shipping points are contracting for foreign tin to be laid down in their cities at a much less rate of freight than is charged by our railroads from the seaboard to these points. This is a great discrimination on the part of the railroads to encourage foreign shipments and a great drawback on our tin plate industry."

One of the largest manufacturing firms in this country, located in Ohio, report a very favorable trade up to October 1, when their works were closed down on account of the new tariff and pending adjustment of wages. They regard the outlook as fair, and are among those who have decided to run their plant non-union, which they expect to be able to do with little difficulty.

Improvements in Manufacture.

Great strides have been made during the past year in the direction of improvements in tin plate machinery and in the general appliances connected with the industry. The American genius for inventing has evolved some remarkable labor-saving machinery, and new tinning machines, pickling machines and apparatus for handling, cleaning, polishing and even sorting and packing the plates have been among the developments of the year for which patents have been applied and awarded. New processes for facilitating manufacture and improving the product are being constantly adopted in all the works.

Tin Plate Machinery.

Several firms have embarked in the manufacture of tin plate machinery as a specialty, and the industry has already become a very important one. These firms have all enjoyed an excellent business during the year in ministering to the needs of the numerous manufacturing concerns that have been building or adding to their plants.

American Black Plates.

The number of tin-plate plants that manufacture their own black plates has grown materially. Nearly all the latest additions to the list of American makers combine the two lines, while a large number of rolling mills have added, or are adding, tin mills for the production of plates for tinning purposes. The quality of the American black plates is admittedly excellent, and these are uniformly preferred by the dipping firms to the foreign material. Latterly the alteration in the duty on tinned and black plates has made the use of the domestic plates almost prohibitive to those manufacturing firms who do not roll their own material, and they have been forced, for economy's sake, either to revert to the use of imported plates or to shut down altogether. This difficulty soon may, and probably will, be surmounted when the wage question is settled and the manufacturers are able to reduce the price of American plates

through reductions in the price of labor and the adoption of more economical processes, although black plates are already down to the lowest price known.

A number of iron and steel mills have erected tin mills during the year, and the production of black plates for tinning is likely to be immensely aug-

mented this year. So far, the supply has been hardly adequate to the demand, and in the busiest quarter of last year—that ending September 30—the complaint was often heard from the tin plate makers of inability to obtain a sufficient supply of black plates to keep their works running as actively as their volume of orders necessitated. This drawback will probably not be again felt.

	1894.	1893.	1892.	1891.	1890.	1889.
Steel rails, per ton.....	\$22.00	\$24.00	\$30.00	\$31.50	\$28.50	\$34.00
IX pig iron, per ton.....	11.25	13.50	14.25	16.00	16.00	18.00
Straits tin duty, per ton.....	314.00	465.00	440.00	448.00	454.00	470.00
Free.....	89.50	89.50	Free.	Free.	Free.	Free.
Pig lead, per ton.....	72.00	74.00	84.00	95.00	82.00	88.00
IC 14 x 20 coke tin, per box.....	4.00	5.35	5.38	5.35	5.20	4.80
IC 14 x 20, duty, per box.....	1.29	2.96	2.36	2.36	2.36	1.97
Import price, less duty.....	\$2.71	\$2.99	\$1.02	\$2.99	\$2.84	\$3.73

menting this year. So far, the supply has been hardly adequate to the demand, and in the busiest quarter of last year—that ending September 30—the complaint was often heard from the tin plate makers of inability to obtain a sufficient supply of black plates to keep their works running as actively as their volume of orders necessitated. This drawback will probably not be again felt.

The use by the tin plate makers of black plates rolled in the United States, in place of the imported article, has grown substantially, and at the present time it is estimated that 75 to 80 per cent. of American tin and terne plates are made from American steel and iron sheets. Colonel Ayer's last report, for the quarter ended June 30, 1894, gave 73 per cent. as the proportion at that time.

Palm Oil.

Through the first effect of the new tariff law on the tin plate industry, there was some falling off in the volume of business done in palm oil. For the past six months, however, there has been about double the trade of the last six months of 1893, and as the demand has taken on some degree of strength, competition has correspondingly increased, with a tendency to reduce the margin of profit.

The Tin Plate Market.

We print, in conclusion, an interesting memorandum on the tin plate market for the past year, issued by the old and well-known firm of Bruce & Cook of this city, which contains a review of the situation from the jobber's point of view. They write, on January 1, 1895, as follows:

The history of the tin plate market during 1894 was a gradual decline in price by makers, and a sudden drop October 1, when the new rate of duty took effect. The very low prices obtaining for steel and pig tin have made possible the lowest prices on tin and terne plates ever known, and this with a duty of \$1.20 per 100 pounds, or about 50 to 60 per cent. of the present value of plates used by canners and terne plates used for roofing. The causes for this decline may be found in the over-production of steel, and under-improved methods at low prices—the low prices for pig tin, owing partly to the low rate

of silver, and the operations of a tin syndicate and those opposed to it. As labor, steel and fuel are by far the most important items entering into the cost of tin plate, any change in these may be taken as a sure and quick guide as to future value of plates.

A comparison of prices ruling in the latter part of December in large lots may be of interest:

The resources of this country are very great for almost every known commodity and, for many of them, far exceed those of any other country. Our home market is an exceedingly large and important one and should be served by producers on terms as favorable as to any other, but we should not be content with this alone. We must do an international trade, and to do this we must give our producers and manufacturers the best market to buy in. We must be a nation among nations, able to reach the best of the world's markets for both buying and selling, but, above and beyond all, we must have a system of currency and finance not useful in our own country alone, but available the world over. A United States dollar should be such that it will be recognized and accepted for a dollar value at sight, wherever or whenever seen. No other kind should be issued. As "no man liveth to himself," so it will be with nations. We hope for wise legislation at Washington on the currency question, and with as little delay as is consistent with wisdom.

Values do not usually remain at the lowest point very long. We believe that they are there now, and that there are evidences of a better demand, a revival of industries, after nearly two years of prostration. Let those who guide labor and those who control capital study each other's interests, work in harmony for a common end, and we are sure the trade of the country will right itself, giving to all honest men an honest return for honest labor.

The Coal Mining Situation.—The joint convention of coal operators and miners of the Pittsburgh district, held in that city on Friday, the 28th ult., adjourned without reaching a settlement of a wage rate to be effective until May 1 next. The question was left to a committee consisting of three operators, three miners and three disinterested citizens of Pittsburgh. This committee is expected to meet in conference in about two weeks, and in the mean time the district rate for Pittsburgh will remain at 55 cents, the price adopted by the Railroad Coal Operators' Association. John Burns, M. P., the well-known labor leader of England, and M. M. Garland, of the Amalgamated Association, were both present at the above conference.

Plans for nearly 2600 buildings, at an estimated cost of \$51,300,000, have been submitted in New York City during the past year, a slight increase over 1893, if the Cathedral of St. John the Divine be excluded.

STOVE TRADE NOTES.

The Stove Trade of 1894.

BY GEO. W. COPE.

Review of the Year.

STOVE MANUFACTURERS should congratulate themselves that the worst year known in recent times is over. With no absolute certainty as to the developments of the future, they can at least hope that 1895 will show a material increase in the volume of business. And it is entirely reasonable and in accordance with natural laws that this should be the case. The year following a severe financial panic is always a period of depression, for recuperation is a slow process. It is estimated that the trade of 1894 in regular lines of coal and wood stoves was about one third less than that of 1893. This is due to the very light sales in the first six months of the year, as compared with the excellent demand in the corresponding period of 1893. It must be borne in mind that the panic of the latter year occurred in June. Hence the latter half of 1893 felt its brunt, and genuine recovery did not set in until 1894 was well spent. The improvement in the last few months of the year was not sufficient to compensate for the dullness of the first part.

The trade reports published in our columns from time to time during the year very accurately set forth the prevalence of these conditions. New England, New York, Philadelphia, Baltimore, Cincinnati, Chicago and St. Louis substantially agreed that the first quarter of 1894 showed but slight recovery in their several sections. Each month marked a little gain over that preceding, but the increased business was not enough to restore even a semblance of activity for either manufacturers or merchants. Stove foundries ran spasmodically. There were frequent reports in our news items of foundries starting up, only to be followed in a short time by statements that the same foundries had been obliged to shut down until accumulated stocks could be worked off. Manufacturers with plenty of capital, or with facilities for securing the necessary money, ran steadily on short time to enable their workmen to live, even though warehouses were filled to overflowing, showing themselves practical philanthropists.

The second quarter of the year was but little better than the first. New

England reported a very conservative feeling among dealers, who were unwilling to increase their trade by selling stoves on credit to workmen on short time and reduced pay. New York admitted that a demand which set in on the opening of spring had been short lived. Philadelphia found more business doing, but most buyers hesitating about placing orders in advance of their actual requirements. Chicago testified to an intermittent trade, varying from satisfactory orders in exceptionally prosperous localities to no demand whatever in sections still suffering from business prostration. St. Louis appeared at this time to be in best shape, having been benefited by cut freight rates to outlying districts, during the prevalence of which the St. Louis manufacturers and merchants had been able to reduce their stocks. June saw many Western foundries compelled to suspend operations on account of the coal miners' strike, which cut off their supply of coke. The shortage of coal was for a time so serious that it caused a little boom in gasoline and oil stoves in the very heart of the Western coal mining regions. July was dull in the East, but fairly active in the West, where the approach of harvest, with its prospect of ready money then in farmers' hands, gave dealers more courage to order stocks. But August saw blighted hopes, as the July railroad strikes had injured general business, checking the operations of innumerable local industries, while nature joined forces with man to ruin the trade by the prevalence of scorching winds, which burned up vegetation over a wide expanse of country in the West. Disheartened merchants countermanded their orders.

September and October, however, witnessed a decided change, particularly in the West. It was found that only Western Kansas and Nebraska and portions of South Dakota were actually suffering from crop failures due to drought and hot winds. Iowa, being an older State, with farmers who had enjoyed many years of prosperity, proved itself superior to one season of short crops. Other Western States were blessed with good crops, and the Southwest was particularly well favored. Hence the demand for stoves assumed something of its old-time activity, being far better than for the corresponding period of 1893. November was, in the main, an excellent month, but the weather was unseasonably mild, causing a falling off in the demand for heating stoves. December was a quiet

month, as usual, trade being confined to small shipments to meet the requirements of dealers with occasional customers.

Several features of the trade of 1894 call for special reference. It was a hard year on traveling salesmen. So many uncertainties clouded the business sky that dealers placed very small orders, and then only when they were positively certain that they could sell the goods. Hence, salesmen were obliged to canvass their districts frequently, so as to be sure to catch the dealer ready to buy. Another feature was the great demand for stove repairs. All sorts of odd castings were called for, some of which had not been in demand for years, showing that parts of stoves were being renewed which in good times would cause owners to discard the stoves and buy new ones. Large stove companies found their repair department a much more important source of revenue than ever before. Irregularity in prices became a fruitful source of annoyance in some localities, owing to the ambition of some manufacturers to extend their trade, regardless of the absolute certainty that they would only reap a temporary advantage from the inauguration of such a policy. If it had been continued it would have merely resulted in the lowering of competitors' prices, so that the last stage of the trade would have been worse than the first, because nobody would have increased his volume of business, but would, perhaps, have sacrificed all his profits on his still meager sales. Another interesting feature was the continued growth of the business in steel ranges. It is believed that more of these were sold in 1894 than in any previous year, as prominent manufacturers, making steel ranges a specialty, were frequently considerably in arrears on deliveries. The manufacturers of oil heating stoves also did well, as compared with previous years, their circle of consumers steadily widening.

Freight Questions.

In connection with the course of trade the subject of freight rates comes up very closely. Several important developments took place in this line during the year. The Southern manufacturers suffered seriously by the imposition of prohibitory rates on stoves to Northern points in the latter part of 1893. Several of the Southern foundries had until then enjoyed an outlet in Northern markets which was of much importance to them, but this was suddenly cut off, and the loss of trade was

so great that they were compelled to shut down. The manufacturers used their utmost endeavors to have the rates reduced, but it was not until the latter part of September, 1894, that they were successful. The importance of the reduction may be seen from the statement that the charges per hundred pounds from Chattanooga to Cincinnati were changed from 47 cents to 19 cents. The Western stove manufacturers also had their bit of experience of a slightly different character. In November they learned that the Western Classification Committee of the railroads had decided that after January 1, 1895, the classification on stoves in less than carload lots should be raised from third to second class, and, at the same time, the minimum weight of a carload should be increased from 20,000 pounds to 24,000 pounds. The change thus ordered involved an advance of 25 to nearly 50 per cent. in the rates of freight on all Western business. It was the unanimous opinion of the stove trade that conditions did not warrant any advance in freight rates. The cost of stoves to Western consumers would thus be so enhanced as to threaten a serious restriction of the demand. Efforts were accordingly made at once to induce the railroad companies to rescind their action. So much pressure was brought upon the managers by manufacturers and merchants that a special meeting of the Classification Committee was called in December, at which the new classification was reconsidered and the old one restored, with the understanding that no change shall be made for at least the next six months. On December 1 lower freight rates on stoves were established from Louisville to Southern points, in compliance with the requests of Louisville manufacturers. Another movement is now on foot to secure the reduction of freight rates in Illinois, which have for a long time been higher than those prevailing in neighboring States, and have thereby operated as a discrimination against the local manufacturers in endeavoring to secure trade in their own State. These occurrences show the importance of the subject of railroad freight rates as a topic for permanent consideration by local stove associations as well as the national body.

Meetings of Associations.

The event of the year in gatherings of manufacturers was the twenty-third annual convention, which was held at the Auditorium Hotel, Chicago, on May 2 and 3. The occasion was one of the most interesting in the history of the National Association of Stove Manufacturers. An unusual number of exceedingly practical papers was read, and the discussions were animated and instructive. At this meeting it was resolved that current prices and terms on stoves should be firmly maintained during the year 1894, in the best interests of manu-

facturers, dealers and labor. The following officers were elected for the ensuing year:

President, George D. Dana, St. Louis.

First vice-president, Lazard Kahn, Hamilton, Ohio.

Second vice president, Francis Kernan, Utica, N. Y.

Treasurer, W. S. Stevenson, Philadelphia.

Secretary, D. M. Thomas, 80 Broadway, New York.

Board of Management, H. W. Buttorff, Nashville, Tenn.; Henry Cribben, Chicago; C. A. DuCharme, Detroit; Frederick Will, Rochester, N. Y., and W. E. Walker, Taunton, Mass.

The Stove Founders' National Defense Association held their annual meeting at the same place, on the day previous to the meeting of the National Association, and re-elected the old officers, headed by Henry Cribben of Chicago as president. Harmonious relations with workmen were reported, and the proceedings were consequently of a routine character.

A meeting of Southwestern Stove Manufacturers was held at the Southern Hotel, St. Louis, on August 20, and was attended by representatives of all the foundries of St. Louis, as well as many of those in Southern Indiana and as far south as Memphis, Tenn. Questions of important local interest were considered. Another meeting was held at the same place on November 7 and 9, which was even more numerously attended, and by manufacturers from a wider scope of territory. Steps were taken toward the formation of a Southwestern Association, to meet bi-monthly or quarterly, to regulate local matters and to act in harmony with the National Association.

At the Grand Hotel, Cincinnati, December 4 and 5, an important meeting was held which was attended by a considerable number of the most prominent stove manufacturers of the West and Southwest. Action was taken upon the proposed reclassification of stoves by railroads, and efforts were made to harmonize differences between Northwestern and Southwestern manufacturers, while prices were also discussed to some extent. Much business was put in shape for final consideration at the next annual convention of the National Association.

New Patterns and Designs.

Notwithstanding the general dullness in the stove trade, enterprise was not completely checked. Many manufacturers brought out new patterns with which to coax needed dollars from reluctant pockets. Popular constructions, which had been on the market for some time and had lost their novelty, were redressed in order to awaken fresh interest. Less was done in this way than in previous years of activity, but it is noteworthy that so much was done at a time when economies of all sorts were being enforced to reduce running ex-

penses of manufacturing. Some classes of stoves, which had been previously made by a very few, were brought out by others in order to catch the rising breeze of public favor. Among these is the cast iron air tight stove for burning soft coal, which has been remarkably successful the past year, due very probably to the enforced economy prevailing among the general public, which has led in the West to the substitution of cheap soft coal for the much dearer anthracite, but compelled the use of a different type of stove. Sheet iron air tight stoves have also been brought out for wood, being further adapted to the use of chips, cobs, bark, &c., and therefore have met with a wide sale in many portions of the country, owing to their low first cost and their adaptability to cheap or refuse fuel. Phenomenal sales are reported of these sheet iron wood heaters. Great progress has also been made in the construction of stoves specially designed to burn straw and hay, and therefore in much favor on the treeless plains of the Northwest, which are also long distances from coal deposits. Greater success has also been attained in the construction of stoves for burning lignite, which is found so abundantly in some parts of the Rocky Mountain region, but cannot be burned to advantage in stoves of ordinary construction.

Improvements in Plant.

Considerable capital has been invested during the year in providing better manufacturing facilities, rebuilding burned foundries, enlarging warehouses, improving office accommodations, &c. Among the most important improvements of this character in the stove and allied trades are the following:

The Auburn Stove Foundry Company of Auburn, Maine, rebuilt their works, which were damaged by fire in 1893.

The Excelsior Steel Furnace Company of Chicago removed into much larger quarters at 38 and 40 West Monroe street, where they occupy a five-story and basement building in the manufacture and storage of furnace fittings, furnaces, boilers, &c.

The Bridge & Beach Manufacturing Company of St. Louis demolished their old foundry, which had been in use since 1848, and erected a seven-story building, extending from Main street to the levee. It is equipped throughout with the latest improved machinery of the most approved design.

The Glazier Oil Stove Company of Chelsea, Mich., built an important addition to their works.

The Michigan Vapor Stove Company of Grand Rapids, Mich., removed into a much larger building, to meet the requirements of their growing trade.

F. Meyer & Bro. Company of

Peoria, Ill., largely increased their capacity for manufacturing furnaces.

The Spicer Stove Company of Providence, R. I., made important additions to and changes in their foundry, adding greatly to the convenience of the plant as well as increasing their facilities for production.

The Warren Hardware Company of Warren, Ohio, erected a new building for the manufacture of steel ranges, enabling them to materially enlarge their output.

W. M. Crane & Co., 838 Broadway, New York, increased their facilities for the manufacture of hotel and restaurant cooking appliances.

The Detroit Stove Works completed one of the finest stove warehouses in the country at 2921 to 2929 La Salle street, Chicago.

The Coldwater Oil Stove Company, Coldwater, Mich., greatly enlarged and improved their plant.

The Front Rank Steel Furnace Company of St. Louis took possession of much larger quarters at 705 and 707 North Main street.

The William Miller Range & Furnace Company of Cincinnati erected a much larger building at Seventh street and Broadway, to accommodate their increasing business.

Cribben, Sexton & Co. of Chicago built a very fine office and warehouse at 52 to 56 Erie street, immediately adjoining their foundry, and removed their sales department to it from Lake street, where they had been for 20 years.

The Hood Furnace & Supply Company of Corning, N. Y., rebuilt their plant for the third time in their history, greatly enlarging their facilities, which are exclusively employed in the manufacture of warm air furnaces.

The Thomas White Stove Company of Quincy, Ill., added a five-story brick building to their works, to be used as a mounting shop and for storage.

The Channon-Ernery Stove Company of Quincy, Ill., built a brick boiler and engine house and a four story brick building to be used for cleaning, mounting and trimming. They also put in a new nickeling plant.

Rathbone, Sard & Co. of Aurora, Ill., erected a large addition to their already immense warehouse, greatly increasing their facilities for making prompt shipments of stoves during the busy season.

The Rock Island Stove Company of Rock Island, Ill., put up a model office building, two stories in height, of red brick with stone trimmings, the ground floor to be used as a sample room.

Floyd, Wells & Co. of Royersford, Pa., made extensive improvements in their foundry.

The Favorite Stove & Range Company of Piqua, Ohio, added a great deal of new machinery to their equipment.

The Lexington Foundry Company of

Lexington, Ky., erected a large warehouse building for storing patterns, &c.

The Thatcher Furnace Company of New York removed to a much larger warehouse and salesroom at 240 Water street and made numerous improvements in their plant at Newark, N. J.

The Ireland & Matthews Manufacturing Company of Detroit, Mich., have erected an additional three-story building for the purpose of increasing their manufacturing facilities, being large makers of stove trimmings and ornaments.

New Companies.

Among the new establishments launched this year in the stove trade or kindred lines are the following: The Ferrosteel Company of Cleveland and Chagrin Falls, Ohio; the Evansville Stove Works of Evansville, Ind.; the Rapid Transit Stove and Furnace Company of Baltimore, Md.; Cole & Cole of Omaha, Neb.; the Standard Range Company of Evansville, Ind.; the Cincinnati Steel Range Company of Cincinnati, Ohio; the Mobile Stove and Novelty Works of Mobile, Ala.; L. G. Compardet of Des Moines, Iowa; the Schaab Puff Stove Company of St. Louis; the Home Stove Company of Indianapolis, Ind.; the Beaver Falls Heating and Ventilating Company of Beaver Falls, Pa.; the Detroit Galvanizing and Sheet Metal Works of Detroit, Mich., as makers of sheet iron stoves; the Simmons Hardware Company of St. Louis, as makers of sheet iron stoves; the Hagey Stove Company of St. Louis; Ferris & Sons of St. Louis; A. Ohnemus & Bro. of Quincy, Ill.; the Manchester Stove Company of Manchester, Ohio; the Bly Gas Burner Company of Sioux City, Iowa; the Queen Stove Company of Denver, Col.; the Economy Gas Stove Company of Decatur, Ill.; the Marion Heating Company of Marion, Iowa; the Plymouth Stove Company of Boston, Mass.; the Western Stove & Manufacturing Company of Milwaukee, Wis.; the Dayton Manufacturing Company of Dayton, Ohio; the Chicago Gas Stove Manufacturing Company of Chicago; Moore Brothers of Wichita, Kan.; the Conover Fire Place Manufacturing Company of New York; the St. Louis Gas Radiator Company of St. Louis; the Ryans Hot Air Heating Company of Kansas City, Kan.; the Galusha Stove Company of Rochester, N. Y.; the Lansing Co-operative Stove, Furnace & Fuel Company of East Lansing, Mich.; the Albany Facing Mill Company of Albany, N. Y.; the Eclipse Stove Company of Rockford, Ill.

Business Changes.

Head's Iron Foundry of Utica, N. Y., was succeeded by Giblin & Co.

The Security Gas & Vapor Stove Company of St. Louis were succeeded by L. B. Jones as manufacturer of the Security gas stove.

The business of E. D. Ransom & Co. of Albany, N. Y., manufacturers of

foundry facings and supplies, was sold to the Albany Facing Mill Company.

The A. C. Barler Mfg. Company succeeded the Huette-Barler Mfg. Company of Chicago, makers of Barler's Ideal oil heater.

The Bridgeport Stove Works Company succeeded Lowman Brothers of Bridgeport, Ala.

Bramhall, Dean & Co. of Chicago were succeeded by Dean, Huot, Brooks & Moneuse Company.

The Bain Stove Company of Charleston, Ill., failed.

The Central Stove Works were incorporated at Lebanon, Pa., to succeed Forster Brothers.

E Bement & Sons of Lansing, Mich., purchased the business of the Wilcox Heat Light Company of Grand Rapids, Mich.

The Bennett & Peck Heating & Ventilating Company of Cincinnati changed their name to the Peck-Williamson Heating & Ventilating Company.

The Rogers Stove & Foundry Company of Belleville, Ill., failed.

The Simonds Mfg. Company of New York passed into a receiver's hands.

The business of the Baxter Stove Company of Mansfield, Ohio, was divided, the Monarch vapor and gas stoves passing under the control of the Monarch Gas & Vapor Stove Company.

The Raymond & Campbell Mfg. Company of Middletown, Pa., passed into receivers' hands.

The Chicago Stove & Range Company bought the stock and business of the Chicago branch of the Sill Stove Works.

Fires.

On February 10 the works of E. Bement & Sons, at Lansing, Mich., were damaged to the extent of about \$10,000; on the 18th the Glazier Stove Company of Chelsea, Mich., lost their warehouse and offices; on the 19th Hess, Snyder & Co. of Massillon, Ohio, lost their pattern storehouse; on the 25th the works of the Bloomington Stove Company of Bloomington, Ill., were practically destroyed; on April 5 the Baxter Stove Company of Mansfield, Ohio, suffered the loss of their storage warehouse; on May 28 the Kibler Stove Works of Denver, Col., lost a portion of their patterns; in June the foundry and pattern shop of Bridgeford & Co. of Louisville, Ky., were destroyed; on July 2 the large warehouse of Stratton & Terstegge of Louisville, Ky., was burned; on July 8 the factory of the Quick Meal Stove Company, at St. Louis, was partially destroyed; on September 1 the foundry of Cribben, Sexton & Co. of Chicago was slightly damaged; on September 3 the Van Wie Gas Stove Works, at Rockford, Ill., were completely burned; in the same month the works of the Memphi Stove Company of Atlanta, Ga., were partially burned; on Sep-

tember 25 the foundry of the Gladiator Stove Works, at Russell, Ky., was destroyed; in October the Cleveland Foundry Company of Cleveland, Ohio, were burned out, the plant being leased from the Cleveland Co-operative Stove Company; in November the foundry of George Harby & Sons, at Russell, Ky., was destroyed.

A Few Items of Interest.

The Anshutz Bradberry Company of Pittsburgh celebrated in 1894 the fiftieth anniversary of the establishment of their business. In 1793 the first blast furnace west of the Alleghany Mountains was erected at Pittsburgh by George Anshutz, an uncle of the founder of the firm. The name is thus indelibly connected with the iron history of the famous Iron City.

In April the Sharon Stove Works of Sharon, Pa., delivered a stove to a customer in six hours from the time the pig iron was melted for it in the foundry cupola.

George H. Barbour of the Michigan Stove Company, Detroit, will be long remembered by the poor of that city for his indefatigable work in the winter of 1893-94 in relieving their necessities.

B. W. Dodson, for years permanently identified with the stove business, retired from it in 1894. He was last connected with the Detroit Stove Works as second-vice president in charge of their Chicago branch.

John Keyser, a veteran stove manufacturer of New York, retired from business July 1, having spent 55 years of his life as a manufacturer of stoves and furnaces and an inventor.

The Indiana Stove Works of Evansville, Ind., put in force a plan for the benefit of their regular employees in case of sickness or accident. The sum of \$1000 was set aside for this purpose, to be drawn upon under certain stipulations, married men to receive \$5 per week, unmarried men \$3 and apprentices \$2.

Deaths.

The death roll for 1894 includes a number of prominent names. In January George W. Gardner, manufacturer and inventor, died at Troy, N. Y.; Robert White, an old employee of Rathbone, Sard & Co., died at Utica, N. Y. In March George H. Pickering, a veteran traveler in the employ of the Spicer Stove Company, died at Providence, R. I.; Samuel Freeman, long connected with the Magee Furnace Company, died at Boston. In April Anson Ingraham, for years a stove manufacturer at Troy, died at Center Cambridge, N. Y. In June William W. Corner, who had also been a manufacturer at Troy, died at Poughkeepsie, N. Y.; B. C. Bibb, president of the B. C. Bibb Stove Company of Baltimore, Md., died at Baltimore. In August Frank F. Proctor, secretary of the Culter & Proctor Stove

Company, died at Peoria, Ill.; Jesse Reynolds, senior partner of J. Reynolds & Son, died at Philadelphia. In September Amos C. Barstow, president of the Barstow Stove Company, died at Providence, R. I.; Benjamin Carver of the Grander Stove Works, died at Royersford, Pa.; Charles F. Whiting, long in the stove trade and latterly a salesman for Eugene Munsell & Co., died at Orange, N. J. In October Will Stork, a well known stove salesman in the employ of the Portsmouth Stove and Range Company, died at Portsmouth, Ohio. In November Robert Diven, one of the oldest stove men in New York, and for nearly forty years connected with the J. L. Mott Iron Works, died in New York; James B. Taylor, long a confidential employee of the Richardson & Boynton Company, died in Brooklyn. In December Norman H. Galusha, long a prominent manufacturer, died at Rochester, N. Y.; J. Emery Eston, for a number of years president of the Syracuse Stove Company, died in New York.

Opinions from the Trade.

As the new year opens and the accounts for the past 12 months are closed, the members of the trade naturally turn their thoughts to the outlook for the future. As conditions are not the same in all sections, it is not surprising that there is a diversity of opinion in the trade as to the volume of business likely to be transacted during 1895. In the light of the reports from stove manufacturers of the country it appears that the majority consider the outlook for business during the next few months as far from encouraging, although an improvement is regarded likely in the near future. In those sections where the crops have been poor or practically a total failure, thus seriously reducing the purchasing power of consumers, a poor business is expected until the fall, when trade will be better than for the corresponding period of last year. In other sections the outlook for spring trade is said to be better than a year ago, but it does not seem likely that prices will show any advance. There are a few who consider the prospect for the new year fairly good, and although at the moment there is very little on which they can intelligently base a forecast, they express a hope of better times before long.

A manufacturer in the Eastern section of the country writes that, "based upon the state of trade the past few months and the reports from the traveling men, the prospects are not encouraging, and we shall be slow to make up stock." Another concern, who take a little more hopeful view of the situation, write as follows: "Prospects are good for 1895 business, but prices will be low. We are inclined to think that the results of the year's business, so far

as profits are concerned, will be unsatisfactory." An enterprising manufacturer in one of the central Western States expresses the following opinion: "I believe, as the tariff agitation is practically over, confidence has been restored to such an extent that we look for a marked improvement in 1895 as compared with 1893 and 1894." A leading manufacturer in heating specialties in the neighborhood of Chicago, in writing of the prospects of the coming year, says: "They are much better than a year ago. Then every one was discouraged, while now a general feeling of hopefulness prevails which, in itself, is an indication that business will be better. The low prices of building materials should serve to stimulate building, and thus lead to a larger demand for goods." A manufacturing concern located in one of the large wheat and corn growing States say that there is not much ahead to encourage them, "as the drought stricken districts will not be in a position to do much business in 1895, and this, we feel, will cut quite a figure in the volume of trade."

A concern located in one of the leading cities of the South state that they expect to do a light business for at least the first six months of the year, but after August 1 they look for better times. Another firm located in one of the States bordering the Mississippi River write as follows:

"The prospects for the coming year are not encouraging, so far as this section is concerned. The low price of cotton has hurt trade and delayed collections, and as the acreage of cotton has increased to such an extent we see no prospects for the price of cotton being much higher next year. There is some talk among Southern farmers of turning their attention to other crops and decreasing the acreage of cotton, with a view to raising the price. We believe this is the best solution of the difficulty—raising less cotton and buying less corn and pork from the West."

An Ohio manufacturer, who considers the prospects for the new year as fair, states that the open winter has kept dealers from buying, and as soon as trade brightens he believes there will be a fair volume of business in the stove line. Another concern in an adjoining State do not look for a very prosperous year, owing to the low prices of cotton and wheat, through which the purchasing power of the farmer is much reduced, and in addition to that retailers are said to be carrying large stocks of heating stoves. The opinion of manufacturers in the Northwest seems to be of about the same nature as some of the manufacturers of the South. A leading concern, writing with regard to the prospects for the coming year, say:

"We do not look for any great improvement. The farmers of the Northwest cannot raise crops with a profit. We are almost wholly dependent on the products of the soil yielding a good return, and until they do we cannot look

for an appreciable gain in the volume of trade."

The conditions which have prevailed in manufacturing circles during the past year have of course exerted a greater or lesser influence upon the working classes, to whom the trade looks for the consumption of its product. The financial strength of the purchasing classes in the Western stove trade is reported by some to be less than it was a year ago. One explanation of this is given by a leading stove manufacturing concern in the Northwest, who say:

"The farmers cannot raise wheat at 40 cents a bushel and get back the first cost. Wheat has heretofore been the staple product of the Northwest, and when farmers could get from 75 cents to \$1 a bushel at the railroad stations they could make money. They must now turn their attention to more diversified farming, and it will take a little time for matters to adjust themselves. Meanwhile they will, of necessity, be compelled to restrict their purchases to the essentials."

A Pennsylvania manufacturer, referring to the financial strength of his customers, does not consider that it is more than one-half of what it was in the year 1892. This may be an extreme view, and in contrast to it is the report of a manufacturer in Indiana, who writes that, notwithstanding the hard times and the unusually low price of products, "more people have discounted their bills than ever known before." Still another writes that a closer examination of credits has had the effect of driving the "little fellows" out of business. They state that they lost less last year, in proportion to the business done, than in any previous year. Other manufacturers consider that there has been no change in the financial strength of their customers, while still others state that collections have been better than expected, customers having paid their bills promptly, while the tendency seems to have been to get nearer a cash basis.

Miscellaneous.

The conditions which have existed during the past year have had a tendency to stimulate to some extent the trade in stove repairs, for when, under ordinary circumstances, a new stove would be purchased to replace one nearly worn out, the consumer has bought repairs and made the old range or heater serve for another winter.

While, therefore, it may be stated that competition has been sharp and profits small, the volume of business transacted by the concerns engaged in the repair trade has been of a satisfactory character, and there is an encouraging outlook for the new year. Manufacturers of fire brick report a trifle less satisfactory trade last year than the 12 months preceding, and while some consider the outlook unfavorable, others regard it as good.

The unsatisfactory business in the stove trade was reflected in that of

stove ornaments and trimmings, where competition was very sharp and profits smaller than the year before. The outlook, however, is regarded as much brighter than it was a year ago, and, while no "boom" is expected, a good trade is counted upon during the next 12 months.

Some of the pattern makers report the demand for patterns for castings about equal to some of the previous years, with somewhat less competition and a smaller margin of profit. The outlook for 1895 is considered good.

The Vapor Stove Trade in 1894.

To ascertain the general condition of the gasoline stove trade for the year 1894, a correspondent of *The Metal Worker* interviewed Charles A. Stockstrom, president of the Ringen Stove Company and Quick Meal Stove Company, St. Louis, Mo., with the following result:

How does the output of 1894 compare with 1893?

The total output of vapor stoves for 1894 is calculated to be about 20 per cent. below that of 1893, which would seem to compare favorably with the average decrease in the output of manufactured merchandise during that period. It should be remembered that the full force of the general depression was not felt by the retail trade to any extent until about July 1, 1893, when the jobbing business was virtually over. Of course what little might have been done during the balance of the season was absolutely cut off, but that did not materially influence the manufacturers' trade, though it had the effect of leaving a stock on the hands of those dealers who had bought liberally, and so found quite a number of them with stocks to be carried over to the season of 1894, thereby helping further to reduce the output during that year. The decline in the number of stoves sold was probably not more than 20 per cent., but in dollars and cents it was very nearly 30 per cent., for the reason that there was quite a material difference in the percentage of the kinds of stoves sold during that period, inasmuch as the junior or small and cheapest kind gained in percentage, while the evaporating stove or higher priced goods lost in proportion—all as a natural consequence of hard times. Dealers have bought very sparingly during 1894, and as a consequence light stocks are reported as a rule, except in sections of the country where bad crops did not enable them to even dispose of the goods sparingly bought.

Do you consider the evaporating stove a fixture on the market, or will it be supplanted by the generator stove?

There is no doubt now that the evaporating stove has come to stay. It has now been on the market for five seasons, and while somewhat crude at first, like all new things, has been so improved that at this present stage it might well be considered perfect. It has entirely superseded the generator stove, of which kind probably not over 1000 have been sold during the past year. Even in the junior stoves the generator principle has been discarded and hardly any of them are made except with individual burners. Dealers in gasoline stoves in

late years, and more so during the last year, have become extremely conservative as far as changing their lines of gasoline stoves is concerned. Perhaps there is not an article made in the construction of which the manufacturer is so liable to err as in gasoline stoves. The most insignificant appearing little thing often makes a stove, which is otherwise correctly constructed, a failure, and the worst of it is that these defects only develop with time, some in a week or month, others in a year or still longer. Only extremely careful, long continued tests, and more especially long years of experience and a thorough knowledge of every part and its action, are absolutely necessary to successfully avoid mistakes. In former years a good many dealers would think nothing of changing their line annually for three or five seasons in succession, but now so many of them have had to pay dearly for their experience that they are not so anxious to take hold of stoves with new experimental features; in fact, they rely, as they should, to a great extent upon the good, careful judgment of the manufacturers whose goods have been handled successfully before. Such is certainly for the better interests of both dealers and manufacturers.

Has the dealer studied the construction of gasoline stoves, or does he sell them without knowing practically anything regarding their construction, &c.?

The dealer recognizes that to be successful it is absolutely necessary to be fully conversant with the detail construction of the stove, so as to be able to remedy any little trouble which may arise when the stove is in use. Failure to operate satisfactorily in gasoline stoves is generally caused by some little thing which is very easily adjusted when the construction of the various parts and the principle upon which these parts operate is thoroughly understood. Some dealers, it is true, do not want to take the trouble to learn anything about the gasoline stove. As a consequence, of course, they have lots of trouble, become disgusted with gasoline stoves in general, and finally quit the line entirely, blaming the manufacturers and their customers for all their trouble, when the blame lies entirely with them.

How do the prices of 1894 compare with previous years?

There has been virtually no change in 1894 in the price of vapor stoves to the trade, with the exception of a decline in the second grade juniors. Material was cheaper than in the previous year, though wages, which constitute more than 50 per cent. of the stove's value, have remained about the same. The stoves throughout, however, are a great deal better than they were in 1893.

Is the production of gasoline stoves much in excess of the demand?

Competition has been extremely keen, since the demand for stoves has not kept pace with the ever growing capacity of manufacturers to turn out goods, so that to-day the manufacturing capacity certainly exceeds the demand by from 50 to 75 per cent. As a consequence, manufacturers are exerting themselves to offer the best on the market.

Are the evaporating stoves turned out to-day as well made as in previous years?

Materials which go to make up the

stove have during the last year been used in heavier gauges, and of better quality than before. When useful, metals of higher grade have been substituted for iron and tin, the greatest care has been used in making all working parts perfect, and as far as outside appearance is concerned there is hardly a stove that has not been greatly beautified. To judge from present indications this policy on the part of every manufacturer, to make his line absolutely perfect and the best on the market, and so retain his hold upon the trade, will, it seems, be adhered to for the coming season. The cost of these various improvements to the manufacturers has been greatly counterbalanced by the decline in the material, but the stoves have been so much improved in safety, durability and freedom from defects, and liability to become temporarily useless, that as an article of merit before the public the evaporating stove never occupied a higher position.

What position do the Junior stoves with individual burners hold in comparison with the evaporator stoves?

Junior individual burner stoves have hardly kept pace with the evaporator. It is true the peculiar line Junior has been made much better and much safer, but on the other hand a second grade Junior has sprung up, in which, on account of the extremely low price at which it is being offered, it is impossible to embody the desirable features which make a first-class Junior as perfect in their way as the full-sized stoves. The user must necessarily be disappointed, and therefore this class of stoves, while generally considered doing missionary work toward the introduction of the evaporating stove, must rather be considered hurtful to the gasoline stove interests in general.

Vapor Stove Consolidation

A history of the year would not be complete without some reference to the efforts made last summer to consolidate the vapor and gas stove interests of the country under the management of the United Vapor & Gas Stove Company. This concern were incorporated under the laws of the State of Illinois, early in June of last year, with a capital stock of \$8,500,000. The negotiations, which were in the hands of Emerson McMillin & Co. of New York, continued for a long time, and had to do with the leading manufacturers of gas and vapor stoves in Cleveland, Chicago and St. Louis. The movement made progress, and there were strong indications at one time that the object sought would be attained. Difficulties arose, however, which were not easily overcome, and the matter drifted along for many months until interest in the movement finally ceased.

THE LEHIGH STOVE & MFG. COMPANY of Leighton, Pa., have issued for the new year a very neat card calendar. The upper portion is embellished with a landscape, in water colors, by Noskes. This is surrounded with ornamental typographical features printed in old gold and red. Attached to the lower portion of the card are the leaflets, carrying a monthly and yearly calendar.

Gas Stoves and Appliances

An increased business in gas stoves and appliances has been reported for the past year, but owing to a number of peculiar conditions the trade has been by no means satisfactory. Gas as a fuel has made a very favorable impression upon the people, and manufacturers made preparations for doing a large trade. Some of the goods were in the hands of the dealers before the full effect of the depression throughout the country was generally understood. Some eagerness was displayed later to get rid of the large stocks which had been manufactured, and as a result new fields were sought and the competition in selling reduced the profits far below a satisfactory figure. Another feature in the retail competition is the sale of these goods by gas companies, who in the desire to increase the consumption of gas either send out the stoves at a small rental or sell them on the installment plan, or at practically cost for cash, much to the disadvantage of the dealer. Some rash claims have been made by enthusiastic dealers in gas goods, and as a result too much has been expected in some quarters from gas stoves. While gas is generally reported as economical for cooking, it may safely be said that the public is not altogether satisfied with the economy of gas for heating.

Some very handsome goods have been placed on the market in both cooking and heating apparatus, the burners being invariably of the atmospheric type. In the construction of burners the object sought is to prevent firing back rather than to secure a perfect combustion or economy. It is claimed in some quarters, and particularly in reference to the cheaper and simpler goods, that there has been wholesale piracy. The effect of this was felt at the height of the season in the low prices quoted on hot plates. Some of the demoralization in prices has been due to the handling of these goods by department stores, where price rather than quality is made the attraction.

New Goods.

During the year hot air furnaces to use gas as a fuel have made their appearance, and a few have been installed for testing this winter. A specially constructed hot water apparatus for the heating of houses has also been placed on the market. Both of these are intended for the use of artificial gas. Some new devices have been produced for attaching to the water service pipes of a building, for supplying hot water for both domestic and bathing purposes, and some others are reported as being ready for introduction as soon as the condition of the market will warrant it. There is a marked increase in the use of gas in hotel and restaurant kitchens. In this field, it is claimed, the demand is for reliable goods, and there is not so much difficulty experienced in securing fair prices for good appliances.

The Proposed Stove Re-classification.

Representatives of the Western railroad companies met in Chicago week before last to consider the reclassification of stoves. The meeting had been specially called for that purpose, in view of the numerous protests which had poured into the offices of almost every railroad company. It was decided to permit the old classification to stand until the next regular meeting of the Western Classification Committee, which will be held in July, 1895. This is an important victory for the stove manufacturers of the Central West, who recognized the movement to advance stove freights by classifying them at a higher rate as a serious menace to their trade. Just at this time any advance in cost is not willingly borne by either dealers or consumers, and the change proposed would have formed a very considerable additional item of expense to them. The manufacturers are to be congratulated on the persistent contest which they inaugurated as soon as the new classification was promulgated, and which did not cease until the railroad companies had announced their change of heart. Without detracting from the good work done by others, credit seems to be especially due to Messrs. Wm. H. Sard, Frederic W. Gardner and William H. Cribben, all of Chicago, who were unceasingly at work and ingeniously effective in bringing to bear the most persuasive influences.

ODD PLATES.

THE MATTHEWS NORTHRUP COMPANY of Buffalo, N. Y., are continuing for 1895 their Vest Pocket Daily Reminder, which has proved itself such an invaluable companion for business men. Their orders last year were much in excess of those of any previous year. They are bringing out 13 styles for 1895.

THE BRAND STOVE COMPANY of Milwaukee, Wis., favor us with one of their calendars for 1895. It is a very pretty wall calendar, composed of a heavy white card, across the top of which is printed a pleasing picture, while below are attached leaves for the months.

RATHEBONE, SARD & CO. now have on their sample floor at Randolph street and Watash avenue, Chicago, a full line of their steel Acorn ranges. Hitherto they have been unable to keep up with the demand so as to properly show samples. They have six sizes in this line, with all varieties of pipe shelves and high closets, bracket reservoirs, water fronts, wood fixtures, &c. In the construction of these ranges they have aimed to furnish a steel range at moderate price, so as to sell by the side of first class cast ranges. They further adopted regular sizes of ovens—18, 20 and 22 inches—suited to regular sized baking tins, roasting pans, &c. Other important and valuable features are found in these ranges. The bracket reservoirs can be attached to any sized range in a few minutes, so that a dealer is not compelled to carry a large stock of reservoir. They are further heated by pipe connections, so that the reservoir can be used with the water front, to furnish large quantities of hot water. All have duplex grates. Fire chamber fixtures are interchangeable among all sizes. When arranged for wood the fire chamber has a swing door to take in large pieces, while the coal ranges have a chute door. These ranges are exceed-

ingly showy, having nickel pilasters on the front corners, nickel trade-mark panel on the oven door, massive towel racks, nickel uprights to high shelves, and nickel frames to all doors.

BERNSTROM BROS. & Co. of Neenah, Wis., have issued a remarkably fine calendar. The leaves for the months are large, permitting the use of large figures, easily read at a distance, and printed in two shades of green. The leaves are fastened to a larger card bearing the firm's name in gilt and crimson lettering, together with their trade-mark.

A Dainty little calendar, notable for its delicate coloring, is being distributed by the Magee Furnace Company of Boston. The pretty youngster whose portrait decorates the card suggests sunshine and summer weather and smiles of welcome to all who interest themselves in the Magee furnaces and ranges. An attractive feature of the calendar is the unobtrusive style in which the advertisement of the company appears.

THE PORTLAND STOVE FOUNDRY COMPANY, Portland, Maine, are distributing with the compliments of the season an exceedingly neat folder of a size convenient to carry in the vest pocket. The cover is embellished with a colored picture showing three little children, while down in one corner are the figures 1895. The inside pages of the folder are taken up with a calendar printed in old gold upon a white ground. Below the calendar is brief reference to the Atlantic stoves made by the company.

A VERY NEAT CALENDAR for the new year reaches us within the compliments of the Presbrey Stove Lining Company, 212 Somerset street, Taunton, Mass. The upper portion of the card is taken up with a representation of a young body driving a "Jersey Family" to the brook to drink. On the opposite side of the brook in a crouching attitude is a dog, who has every appearance of being in a great fear of his Jersey neighbors. Below the picture is the name and address of the company and further down on the card is a calendar proper. The sheets forming this differ from the general run of calendars in that they have at the right a number of blank spaces for the purposes of memoranda. The card is neatly gotten up and is arranged with a white cord for the purpose of hanging it upon the wall.

THE RICHARDSON & BOYNTON COMPANY have closed their works in Brooklyn for the usual stock taking and inventory incident to the end of the year.

RATHBONE, SARD & Co. of Chicago and Aurora, Ill.; Albany, N. Y., and Detroit, Mich., will make this year the Magnet Acorn range for hard coal with a fire box at the right hand, to meet the frequent calls for a construction of this character. The range will also be made of the usual pattern, with the fire box at the left hand. The Acorn pocket calendars for 1895 are being distributed. They are of the same shape and design, with revolving leaflets, as in previous years, and the demand for them, instead of falling off, constantly increases.

ONE OF THE HANDSOMEST NOVELTIES of the season to reach us thus far is that presented with the compliments of the Highland Foundry Company of Boston, Mass. It consists of two pieces of cardboard arranged in the shape of a folder, the front of the cover being embellished

with a beautiful winter scene printed in colors and having all the effects of snow and ice. The picture has a frame of rustic design and depending from the twigs and leaves are long icicles and bunches of snow. Opening the folder there is revealed a winter scene that is difficult to describe. In the foreground are boys and girls amusing themselves sliding and skating, while beyond are two people in a sleigh drawn by a spirited horse, the whole presenting a very lifelike appearance. Still further in the background and at the left is a Swiss cottage, burdened with snow and ice. On the hill at the right are other buildings, the deep background showing a winding valley with the mountains covered with snow and ice, the color effects being such as to produce a charming picture. The entire make-up is such as to render the New Year's souvenir entirely unique in its way and entitle it to a prominent place in the home, for it is too handsome and artistic to be left about the office or shop. Accompanying the above is a cardboard likeness of a young maiden attired in white dress, red hat and shawl, and carrying in her hand a fan, upon which is the inscription "Highland Foundry Company, Boston, Mass." Attached to the base upon which she stands are 12 leaflets carrying a calendar for the days of the week and month, together with the phases of the moon. This unique little calendar is so made as to be used as an easel on the desk.

THE BUCK'S STOVE & RANGE COMPANY of St. Louis, Mo., are distributing, with their compliments, a pocket memorandum book bound in leatherette and carrying upon the inside pages of the cover yearly calendars for 1895-96. There are several pages ruled for addresses, following which are census figures covering the principal cities of the United States and of the world, together with rates of domestic postage. Each page is divided into seven spaces, there being one for each day of the week. At the outer edge of the page is printed the day of the week and month and also the number of the day in the year. At the close are numerous pages for cash items. In the center of the little book, which is a calendar, diary and memorandum combined, we find some remarks relative to Buck's stoves, ranges and heaters.

THE ANSHUTZ-BRADSHERRY COMPANY, proprietors of the Tremont Stove Works, Allegheny, Pa., are sending out a very neat calendar for the new year. The upper portion of the card is printed in a delicate shade of blue, giving a bird's-eye view of the works of Henry Anshutz as they appeared in 1844 and of the present establishment. There is also a *fac simile* of the company's trade-mark and their long distance telephone number. There are 12 leaves for the months, while a thirteenth sheet carries a yearly calendar.

THE STOVE MOUNTERS of Albany have been recently organized into a union affiliated with the Stove Mounters' International Union. It is said that nearly all the stove mounters in the city were enrolled.

MOORE BROTHERS, stove foundry, who occupied, a short time ago, the old Stewart Brothers' plant in Wichita, Kan., have already found their quarters too small to properly handle the business which they have built up, and they have decided to abandon their present quarters and erect a new plant. On December 22 they closed a five-years' lease for a plot at the corner

of First street and Fifth avenue, which gives them about 150 feet frontage on the Atchison, Topeka & Santa Fe Railroad, with a depth of 225 feet. The firm will at once commence the erection of buildings of suitable size to accommodate their business.

HESS, SNYDER & Co. of Massillon, Ohio, favor us with a copy of the 1895 calendar which they are distributing to their friends in the trade. Accompanying the calendar is a letter stating that the company will consider it a special favor if it is hung in a conspicuous place where it will serve as a standing reminder of the goods which they manufacture. The calendar is in the form of a large poster, bound with metal strips and embellished with a representation of a painting by Desportes entitled "Royal Setters. Time of Louis XIV of France." Beneath the picture is the name and address of the company with an indication of the lines of goods manufactured. The 12 sheets constituting the calendar proper are printed in clear black letters and figures, so that they are readily recognized at a distance. The company carry a large stock of goods on hand, and are in a position to promptly handle all orders with which they may be entrusted.

THE ECLIPSE STOVE COMPANY of Rockford, Ill., notice of the incorporation of which appeared in a recent edition, are the outgrowth of the old Van Wie Stove Company, and will occupy what is known as the Knowlton plant.

THE KEELEY STOVE COMPANY of Columbia, Pa., shut down on December 20 for the purpose of taking account of stock.

THE MARSHALL FURNACE COMPANY, Marshall, Mich., are, we understand, looking about for more commodious quarters, which will enable them to handle their growing business to better advantage. A representative of the company was in Jackson looking at several sites, but up to latest advice no decision has been reached.

WE HAVE RECEIVED from the Co-operative Foundry Company, Rochester, a copy of the handsome calendar which they have issued for 1895. The groundwork consists of a card measuring 11 x 14 inches, across the top of which, in script letters, is the name and address of the company printed in old gold. A *fac simile* of the company's trade-mark appears in the same color. The sheets carrying the calendar proper are 9 inches square, and are cut to closely resemble a Greek cross. The printing is in white, in clear cut type, upon reddish brown paper, forming a sharp contrast, and enabling the figures to be clearly seen at a distance. The leaves forming the calendar proper are mounted upon a black groundwork, the entire make-up being rich and effective.

THE WORKS of F. & L. Kahn & Bros. of Hamilton, Ohio, closed on Saturday, December 22, for two weeks, during which time the usual inventory will be taken and necessary repairs made.

THE STAR COUPLER COMPANY, St. Louis, Mo., who manufacture the Star coupler for connecting lead to lead pipe and lead to iron pipe, report a heavy increase in the demand for these goods. Dealers who ordered sample lots are now sending in orders for full stocks, and the works of this company are taxed to meet the demand. They are shipping large quantities to stove dealers for connecting water backs to boilers.

LAST WEEK the traveling salesmen of the Favorite Stove & Range Company of Piqua, Ohio, rendezvoused at the Plaza for the holidays. According to a local paper they commenced arriving Christmas night and the last of them put in an appearance Wednesday noon. The list included Tom Clemons of Cincinnati, Ohio; W. P. Sanders of St. Joseph, Mo.; W. H. Pier of Flint, Mich.; W. L. Miller of Chicago, Ill.; J. C. Frame of Indianapolis, Ind.; W. H. Lautzenheiser of Maumee, Ohio; J. C. Taylor of Newport, Ky.; J. E. Schroyer of Indianapolis, Ind., and C. Winkelman of Piqua. They had as their guest Daniel Holden of Bloomington, Ill., Superintendent P. G. Van Wie of the Gas Appliance Department of the company was also a member of the party. The company remained over Sunday, December 30, when they departed for the various sections of the country which they cover in the interest of the company's goods.

B. C. BAXTER, General Manager of the Monarch Stove Company, Mansfield, Ohio, left on the 28th of December for an extended trip through the West and Northwest, for the purpose of establishing distributing agencies in the principal cities of that section, including Chicago, St. Paul, Omaha, St. Joseph, Lincoln and Kansas City.

N. S. KNIGHT has recently severed his connection with the Fuller & Warren Company, Troy, N. Y., and will in the near future call upon his friends in the trade in the interests of the Howe ventilating stoves, made by the Cortland Howe Ventilating Stove Company, Cortland, N. Y.

A RECENT ADDITION to the staff of traveling salesmen of the Monarch Stove Company of Mansfield, Ohio, is H. H. Sanford, who will represent the concern named in the State of Iowa. Mr. Sanford has had many years' experience as a stove salesman, he having represented the Chicago & Erie Stove Company for the past 12 years. In the future, however, he will devote his energies exclusively to the interests of the Monarch goods in the territory named.

THE INSURANCE STOVE & OIL COMPANY have been incorporated at Cincinnati, Ohio, by Herman H. Uckotter, A. J. English, William Uckotter, George Uckotter and Charles A. Albora, for the purpose of manufacturing and dealing in vapor stoves, together with other machines and devices, and also for the purpose of dealing in oil, with a capital stock of \$10,000.

G. T. TRAIN, Memphis, Tenn., has purchased the interest of N. A. Kendall in the Memphis Stove Repair Company.

AT THE ANNUAL MEETING of the Quick Meal Stove Company, St. Louis, the following were elected its officers: President, Charles A. Stockstrom; secretary and general manager, Louis Stockstrom.

VOELKEL & SCHULTZ, Shelby, Texas, have succeeded Ernest Voelkel in the stove and hardware business.

AT THE RECENT ELECTION held by the Ringen Stove Company, St. Louis, the following officers were elected: Chas. A. Stockstrom, president; E. H. Stockstrom, secretary and treasurer. Geo. Kahle, who has been president of the Ringen Stove Company for some years, virtually retired from active business two years since, but still continued to hold the position of president. Deciding to make his home in Dresden, Germany, he has relinquished the presi-

dency and, as above stated, Chas. A. Stockstrom has been elected in his place.

FRANK TULLY, formerly with the Boynton Furnace Company, Chicago, will change his address to 79 Lake street, where he will have charge of the heating department of Geo. L. Rood.

THE KERNAN FURNACE COMPANY will be represented in Chicago by Kernan & Sweeney, 71 West Washington street. The above firm are composed of Joseph F. Kernan and Charles A. Sweeney, who will handle the Chicago and Western trade and will carry a full line of Kernan furnaces.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

B. D. DUGAN, 207 209 Lake street, Chicago, is to install a No. 424 Richmond steam heater in the residence of of Mrs. C. Clafins, Oak Park, Ill.

KEHM BROS. & MERTZ, 289 East Kitzie street, Chicago, have the contract for steam heating in the two four-story store and flat buildings of Gerhardt Roth, Cleveland avenue and Menominee street.

PURVIS & BROCKWAY, 215 Fifth avenue, Chicago, are to install a hot water heating plant in the residence of J. S. Brockway, Western Springs, Ill.

JACOB G. WEBBER, 244 North Clark street, Chicago, has contracts for the plumbing, gas fitting and sewerage in the following residences: G. O. Gottman, Baldwin street and Wilson avenue; J. L. Cochran, 41 Kenmore avenue; E. N. Higgins, Edgewater.

THE REQUEST made by T. Forneff at the last meeting of the City Council of Union Hill, N. J., to be allowed to withdraw his bid for placing steam heating apparatus in the fire houses in the Town Hall was granted, and the contract was awarded to the next lowest bidder, Knack & Son.

J. F. BRADY & BRO., Bridgeport, Conn., have the contract for the plumbing in the new house of P. Burns.

THE AMERICAN DISTRICT STEAM COMPANY of Lockport, N. Y., have secured a contract for a steam heating plant at Terre Haute, Ind., for the Terre Haute Electric Light & Railway Company. They also secured a contract for a plant at St. Joseph, Mo.

H. C. SIMMONS of Bennington, Vt., has secured the contract for heating the new Methodist church.

ANTHES BROS. PLUMBING COMPANY, Fort Madison, Iowa, have the contract for covering the pipes in the First Ward and High School buildings. They are also at work on the steam heating and plumbing for the Masonic Temple, Lee County Savings Bank Building, and have completed a fine job in the Hesse Block, corner of Second and Pine streets.

J. MALLMAN & CO., 134 Center street, Chicago, are doing the plumbing, gas fitting and sewerage in the O'Neal Building, Lincoln avenue and George street.

FRANK J. RUH, 1204 Diversey street, Chicago, has contracts for the plumbing, gas fitting and sewerage in the following residences: Peter Gind, 843 Lincoln avenue; John A. Lundahl,

1318 Wolfram street; John Krunze, Clifton and Belmont avenues.

Geo. L. Rood, 79 Lake street, Chicago, is to place a Prince Royal combination heater in the residence of Dr. O'Neal, 113 Garfield boulevard.

AMONG THE CONTRACTS recently taken for steam heating by the Charles H. Simmons Company, 72-74 Market street, Chicago, can be mentioned the following: Office building, River and Dock streets; flat building of Mrs. Thos. Burrows, 298-306 Erie street; three houses of Nortman, Schlack & Gutrich, Boulevard place.

Decimal Sheet Metal Gauge.

The Norfolk & Western Railroad, says the *Railroad Gazette*, has taken a step in the right direction in casting aside the present confusion and annoying gauges for sheet metal, wire, tubing, &c., and has started a decimal system which prevents discussion as to what a gauge number means. Specification 10 B, issued by R. H. Soule, superintendent of motive power, is for a gauge for sheet metal, wire and tubing, and is as follows:

Sheet metal, wire and tubing (less than $\frac{1}{4}$ inch in thickness), should always be ordered by expressing the thickness in decimals of an inch, in accordance with the following table, in which the figures in heavy type are decimals of an inch and are to be used in making requisitions; the figures in lighter type show the nearest thickness according to the Birmingham gauge, these light figures being given for convenience of reference only.

Inches.	Birmingham gauge.	Inches.	Birmingham gauge.	Inches.	Birmingham gauge.	Inches.	Birmingham gauge.
.002	36	.022	24	.065	16	.125	11
.004	30	.028	20	.070	15	.135	9
.006	25	.032	18	.075	14	.150	8
.008	21	.036	16	.080	14	.165	7
.010	18	.040	14	.085	14	.180	6
.012	16	.045	12	.090	13	.200	5
.014	14	.050	10	.095	13	.220	4
.016	12	.055	10	.100	12	.240	4
.018	11	.060	9	.110	12	.250	3

These gauges are made in the usual form of a disk by the Brown & Sharpe Mfg. Company, and Mr. Soule has made arrangements so that any one wishing them can purchase them direct from that company. It is understood that they are kept in stock. The large figures in the table give the dimensions of the notches in the gauge and the small figures give the nearest Birmingham gauge number.

Six hundred Slav laborers employed at the Edgar Thomson blast furnaces, Bessemer, Pa., have refused to accept a reduction in wages and have gone out on a strike. Eight of the nine blast furnaces have been banked.

The first extensive cold wave of the season has had a severe grip on the country during the past week. The mercury fell to 32° below zero in the Adirondacks.

The Baltimore & Lehigh Railroad, which is now being extended to York, Pa., is about to substitute electricity for steam as its motive power.

TRADE REPORT.

The Iron Market.

The record of the last week in 1894 has not been been very cheerful, particularly on account of the low prices made in the Central West on Bessemer Pig and on Steel Billets. The year closed with sales of Bessemer Pig for early delivery at \$9.80 @ \$9.85, Pittsburgh, the lowest on record.

Steel Billets have declined to \$14.80 @ \$14.85, Pittsburgh, with quite an active market, consumers evidently feeling that it is safe to cover early requirements. Reports have it that Chicago has captured a 10,000-ton order in the Cleveland district.

In Eastern Pennsylvania \$17, delivered, has been touched, which makes the Western price, on the basis of open freights, a little lower. Wire Rods have weakened further and now \$21 at Western mill can be done.

All this means that prices are down to bed rock, and that it is hardly worth taking the chances of possible future contingencies for the sake of reaching a possibly slightly lower level.

Conspicuous among these contingencies is the danger of labor troubles. The lowering of the scales by a leading Pittsburgh concern may drive others in the same direction. It is a step which is much to be deplored.

A number of moderate Cast Pipe orders have been placed and others are getting into shape.

There is little real change in the market for Foundry Pig. The Southern railroads have announced an advance of 25¢ in freight rates to the coast and New England markets. The impression is that they really mean it this time.

The following remarks regarding the Eastern Iron trade, furnished by our Philadelphia representative, show the prevailing condition of the Iron market at the close of 1894: The outlook continues favorable as regards the volume of business, but prices are irregular and unsettled, and with the exception of Foundry and Mill Irons, which are steady, almost everything has a downward tendency. At these low prices any material decline is out of the question, but when the margin between actual cost and actual selling prices is so extremely narrow, even fractional declines assume considerable importance. Fuller time is being made, however, than was the case earlier in the year, and it is probable that manufacturers are doing as well as at any time during the past twelve months, and very much better than they were during the latter part of 1893, so that the general result is favorable, notwithstanding the low prices. The outlook for the coming year may also be said to be fairly encouraging, but nothing decidedly aggressive is looked for until the next crop begins to develop. It is satisfactory to note that most of the iron works will start the new year with a fair amount of work in hand, also that negotiations now in progress promise well for its continuance.

Pig Iron—The announcement of an advance of 25¢ a ton in the freights

from Southern furnaces to Northern consuming points is the most important event of the week. The New York market continues very quiet. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.60 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Our Philadelphia representative writes: The year closes on a fairly steady market, and it looks as though prices would be relatively firm for Foundry Irons. Consumption is increasing, however, and as there is a possibility of higher cost for both Ores and Coke, prices of Pig Metal may in that case be worked a little higher, but the general impression is that 1895 will be a year of extraordinarily low prices. At the moment there is not much disposition to buy in advance of requirements, although orders could be placed at practically the lowest figures ever recorded. The movement in prices during the year shows a decline of about \$1.50 on Foundry Irons, quotations on the first of each month being as follows:

JANUARY, 1894.		
No. 1 Foundry.....	\$13.75 @	\$14.25
No. 2 Foundry.....	13.00 @	13.25
FEBRUARY.		
No. 1 Foundry.....	\$13.00 @	\$14.00
No. 2 Foundry.....	12.50 @	13.25
MARCH.		
No. 1 Foundry.....	\$13.00 @	\$13.50
No. 2 Foundry.....	12.25 @	12.75
APRIL.		
Standard No. 1 Foundry X.....	\$12.75 @	\$13.25
Standard No. 2 Foundry X.....	12.00 @	12.50
No. 2 Plain.....	11.00 @	11.25
MAY.		
Standard No. 1 Foundry X.....	\$12.50 @	\$12.75
Standard No. 2 Foundry X.....	11.75 @	12.25
JUNE.		
Standard No. 1 Foundry X.....	\$12.50 @	\$12.75
Standard No. 2 Foundry X.....	11.50 @	11.75
JULY.		
Standard No. 1 Foundry X.....	\$12.50 @	\$13.00
Standard No. 2 Foundry X.....	11.50 @	12.00
AUGUST.		
Standard No. 1 Foundry X.....	\$12.50 @	\$13.00
Standard No. 2 Foundry X.....	11.50 @	12.00
SEPTEMBER.		
Standard No. 1 Foundry X.....	\$12.50 @	\$13.00
Standard No. 2 Foundry X.....	11.50 @	12.00
OCTOBER.		
Standard No. 1 Foundry X.....	\$12.50 @	\$12.75
Standard No. 2 Foundry X.....	11.50 @	11.75
NOVEMBER.		
Standard No. 1 Foundry X.....	\$12.50 @	\$12.75
Standard No. 2 Foundry X.....	11.50 @	11.75
DECEMBER.		
Standard No. 1 Foundry X.....	\$12.50 @	\$13.00
Standard No. 2 Foundry X.....	11.50 @	11.75

Advices from Chicago report that during the week sales of local Coke Iron were particularly good. Several contracts were made for good lots, in some cases running as high as 750 tons. Quite a number of foundrymen ordered shipments to be made to their yards, so as to be in readiness to start up immediately after the first. Business is, therefore, in much better condition than usual at this time of the year. Several important contracts are also pending. Prices on local Coke Iron are well maintained at the advance recently made, but Southern Coke Iron is giving way, and the margin between local

and Southern Irons has been considerably lessened. Contracts taken for Southern Iron during the week were made at cut prices by leading Southern companies which have heretofore claimed that they were well fixed for business and would not make low prices. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 @	\$14.00
Local Coke Foundry, No. 1.....	10.25 @	10.50
Local Coke Foundry, No. 2.....	9.75 @	10.00
Local Coke Foundry No. 3.....	9.50 @	9.75
Local Scotch.....	10.50 @	11.00
Ohio Strong Softeners No. 1.....	12.50 @	13.75
Southern Silvery, No. 1.....	11.50 @	11.75
Southern Silvery, No. 2.....	11.25 @	11.50
Southern Coke, No. 2.....	10.75 @	10.50
Southern Coke, No. 3.....	9.75 @	10.25
Southern, No. 1 Soft.....	10.00 @	10.50
Southern, No. 2 Soft.....	9.75 @	10.25
Alabama Car Wheel.....	17.50 @	18.00
Jackson County Silvery.....	15.50 @	16.00
Other Ohio Silvery.....	14.25 @	14.50

Foundry Iron is very quiet in the Pittsburgh market and some low prices are reported to have been made. Quotations are given as follows:

No. 1 Foundry.....	\$11.00 @	\$11.25, cash
No. 2 Foundry.....	10.50 @	10.65

Advices from Cincinnati are to the following effect: There has been scarcely a feature in the local market for Pig Iron during the past week worthy of special mention. As a rule, the orders received have been few and for small amounts, yet a few firms have been rewarded by a fair run of business. The disposition of buyers to hold off has resulted in some accumulation of stocks at furnaces in the South. At the close there is more inquiry, and one or two large buyers are in the market for round amounts, one sale of 3000 tons of Foundry Iron being noted at about inside quotations. The Pipe works continue to be the largest melters of Iron at the moment, the relatively low prices current for Pipe, permitted by the low market for Pig, inducing most of the large cities in the country to provide the means to renew and expand present water systems. In fact, there is a general anticipation of a large volume of business after the 15th inst., but with ample Iron offering no advance in prices is expected. Northern Iron is being offered more freely; especially is the Chicago output reported to be seeking a market in Indiana and elsewhere in this territory at a low level. A prominent feature of the general situation in the South among furnaces seems to be an extreme diversity of opinion respecting the present value of Iron, as well as the future course of the market, the result of the various and conflicting views being an unsettled, if not an erratic, market. Quotations are as follows:

Southern Coke, No. 1.....	\$9.75 @	\$10.00
Southern Coke, No. 2.....	9.00 @	9.25
Southern Coke, No. 3.....	8.50 @	8.75
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.00
Ohio Soft Stone Coal, No. 2.....	14.00 @	14.50
Lake Superior Coke, No. 1.....	11.75 @	12.25
Lake Superior Coke, No. 2.....	10.75 @	11.50
Hanging Rock Charcoal, No. 1.....	16.00 @	16.50
Hanging Rock Charcoal, No. 2.....	15.50 @	16.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50
Standard Southern Car Wheel.....	15.75 @	16.75
Lake Superior Car Wheel and Malleable.....	14.25 @	14.75

DERWENT FOUNDRY COMPANY, Ellwood City, Pa., are erecting an enameling furnace in connection with their plant, to enamel iron articles of all kinds.

Metal Market.

Pig Tin.—Prices have receded sharply and the market remains in a weak, unsettled condition, suffering from the weight of heavy stocks here and in Europe, together with unusually large quantities afloat. It is calculated that the visible supply on January 1 was 24,614 tons, against 22,445 tons last month, and 16 390 tons a year ago. Spot stock in the United States, exclusive of Pacific Coast, is estimated at 2714 tons, and the quantity afloat at 1585 tons. European spot stocks were 13,674 tons and the afloats 6641 tons. Shipments from the Straits during December amounted to 5020 tons, of which 1120 tons to United States, 3100 tons London, and 890 tons to the Continent. Speculation here has been fairly active, with the leading operators prominent as sellers of near futures, and also offering the distant deliveries at a discount. Retail business has been tame, and prices for small lots are unchanged at last week's quotations, viz.: 15½¢ @ 16¢ ¢ lb for Straits Pig.

Copper.—No new features have come to the surface during the past week, but a quasi air of mystery is still assumed by the leading sellers, who represent the market as being very firm, yet give no particulars of any important business. From the few facts divulged it would appear that the demand for material for electrical purposes is relatively better than that experienced for other sorts. Inquiries are being received for small quantities for immediate delivery, but orders are still very limited. Lake Ingot in small lots from store is still quoted at 10½¢ ¢ lb.

Sheet Copper.—There is little movement in the trade at the present moment. Consumers are generally engaged in stock taking and figuring out their future requirements. A few weeks will probably develop more inquiry. As the amount of building in prospect is larger than it has been for some time past, there is the likelihood that a gratifying improvement in the demand for Cornice and other manufactured Copper may be brought about in the coming months. Prices are firm for small lots of Sheet Copper from store on a net basis of 15¢ ¢ lb.

Pig Lead.—Business has been on a very moderate scale and the market has shown rather poor form, since consumers have manifested reluctance to take round lots of common Western at over 3¢. The retail demand for small lots being quoted at 3½¢ @ 3½¢ ¢ lb.

Lead Pipe and Sheet.—Jobbers report a very tame demand, although inquiry has been rather larger since the first of the year. No great revival in the business is looked for, however, much before early spring. Prices are weak, though the list is unchanged in this district. A reduction in rates on Lead Pipe and Sheet made by a Pittsburgh Lead company is noticed in another column.

Spelter.—Business has been moderate during the week and the demand is slow in this vicinity. The market is steady, however, despite its narrowness. Prices rule for small parcels at the same figures quoted for several weeks past—namely, 4¢ @ 4½¢, for Western, and the usual premium on fancy brands.

Antimony.—The market has remained quiet, with prices barely steady. Cookson's in small retail lots is quoted at 9½¢ @ 9½¢, and Hallett's at 8¢ ¢ lb.

Nickel.—Prices remain at about 38¢ @ 42¢, according to size of order.

Tin Plates.—Little improvement has taken place in sales of stock goods, and the buying of futures has been on a moderate scale. Jobbers report, however, that the volume of inquiries has increased to a gratifying extent within the last few days. A tendency is also seen toward an interest on the part of consumers in larger lots than they have cared to think of lately. It is hoped that many of these inquiries may materialize and that a brisker business in Tin Plates will develop within the next week or two, when purchasers have figured out their requirements for the month. Stocks are fairly heavy, but the assortment is still rather poor, especially in odd sizes. Prices have not varied much, but are rather weak.

A London cable dispatch of January 2 to *The Iron Age* reports on the British Tin Plate market as follows: In the Tin Plate market business has been slow, although more inquiry was made toward the close of the week. Prices have not changed materially. Shipments have been heavy, but stocks still amount to 225,000 boxes. The quotations, f.o.b. Swansea, are as follows:

Bessemer Cokes, 10 14 x 20.....	@ 9/6
Siemens Cokes, 10 14 x 20.....	9/9 @ 10/
J. R. -steel Cokes, 10 14 x 20.....	18/6 @ 21/
Ternef, 20 x 20.....	10/6 @ 12/6

Sheet Iron.—Mills are fairly well supplied with orders for deliveries extending into the next three months, and inquiry in this class of business is active. Spot and jobbing business in Black Sheets is light. Galvanized Sheets are in moderate demand. Prices show no change.

Chicago Report.

Scrap.—Only small trades are in progress at this time. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	2.00	...
Machinery Scrap.....	6.00	...
Malleable Cast.....	5.50	...
Stove Plate (free of burnt)...	4.25	...
Burnt Iron and Grate Bars....	3.00	...
Sheet Iron and Hoops.....	2.00	...
Flow Steel and Breaking	4.00	...
Stock.....	4.00	...
No. 2, such as Shovels, Hoes,	3.00	...
Old Boilers—Whole (Iron)....	3.00	...
(Iron)—cut in single	5.00	...
Sheets and Rings..	5.00	...
Old Gas-Pipe and Boiler	5.00	...
Tubes.....	3.00	...
Cast Borings.....	4.00	...
Turnings.....	7.50	...
Horseshoes.....	6 ¢	...
Copper Bottoms.....	7 ¢	...
Copper Clips and Heavy.....	6 ¢	...
Heavy Brass.....	3 ¢	...
Light Brass.....	2 ¢	...
Pipe Lead.....	2 ¢	...
Zinc.....	2½ ¢	...
Rubber.....	4½ ¢	...

Anthracite.—The trade is quiet. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8.10	8.35
Stout City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

TRADE DURING the past year was somewhat disappointing to those who had formed expectations of a speedy recovery from the financial and mercantile depression of 1893, but on the whole it may be reviewed with a feeling of some satisfaction, in view of the increased volume of business over the preceding year and the manner in which the trade endured the continued depression. The volume of business was unquestionably fair, as compared with other years, so far as the quantity of goods is concerned, while the decline in values kept down the amount as expressed in dollars and cents. The trade was, however, somewhat spasmodic, periods of something like the old-time activity being followed by intervals when the demand fell off largely and the tone of the market became unsettled and weak.

It is not expected that the last week in December will be characterized by a great volume of business. The fact that travelers are home, that attention is given principally to closing the books and preparing for the new year, and that the holidays with their festivities and amenities engross to a good extent the energies of employers and employees, are influences the full force of which has been felt during the week under review. In other columns we discuss at some length the course of things during the past 12 months and touch upon the outlook for 1895. We trust that our readers have reason for a good degree of satisfaction in the retrospect and in the results of the past year, and to one and all we express the hope that the year which has opened will bring them a large measure of happiness and prosperity.

Advices from Chicago.—The Shelf Hardware trade is in a little better condition than usual at the close of the year. Traveling men are almost without exception at home, and consequently the orders received are those which are being sent in voluntarily by the country trade. Monday mails were not expected to be heavy, but exceeded expectations. In the course of the coming week the salesmen will again be on the road, and the prospects are excellent for immediate business. Prices have been revised for the coming year very extensively. Changes were made in prices from time to time during the year, but not so comprehensively as will now be done. In very few instances will there be an advance, but the reductions made are in some cases small and in others somewhat radical, to meet the new conditions now prevailing.

Notes on Prices.

The important reductions in price during the year have been chiefly in staple goods, but general and Shelf Hardware has to a great extent sympathized with the downward tendency, and the changes which have taken place are illustrated in those referred

No. 1 White Rags.....	b 3	@ 2 3/4
No. 2 White Rags.....	b 2 1/2	@ 2 1/2
Mixed Rags.....	b 1 1/2	@ 1 1/2
Blues and Sds.....	b 1 1/2	@ 1 1/2
Hard Sized White Shavings.....	b 1 1/2	@ 2 1/2
No. 1 White Book Shavings.....	b 1 1/2	@ 2 1/2
No. 3 White Book Shavings.....	b 1	@ 1 1/2
Light Book Shavings.....	b 1	@ 1 1/2
No. 1 Mixed Shavings.....	b 1	@ 1 1/2
No. 2 Mixed Shavings.....	b 1	@ 1 1/2
No. 1 Printed Books.....	b 1	@ 1 1/2
Ordinary Mixed Books.....	b 1	@ 1 1/2
Newspapers.....	b 1	@ 1 1/2
No. 1 Manila Paper.....	b 1	@ 1 1/2
No. 2 Manila Paper.....	b 1	@ 1 1/2
Bogus Paper.....	b 1	@ 1 1/2
Common Paper.....	b 1	@ 1 1/2
Straw Chips.....	b 1	@ 1 1/2
Rinders' Clippings.....	b 1	@ 1 1/2
Jute Butts.....	b 1 1/2	@ 1 1/2
No. 1 Jute Bagging.....	b 1	@ 1 1/2
Mixed Bagging.....	b 1	@ 1 1/2
No. 2 Bagging.....	b 1	@ 1 1/2
Hemp Twine.....	b 1	@ 1 1/2
Manila Rope.....	b 1	@ 1 1/2
Jute Rope.....	b 1	@ 1 1/2
Mixed Rope.....	b 1	@ 1 1/2

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, # b.....	\$0.08 3/4 @ .04
Rubber Shoes, carloads, delivered at factory, # b.....	.05 1/4
Rubber shoes, less than carloads, # b.....	.04 1/4
White Wringer Rolls, # b.....	.05 3/4
White Syringes, # b.....	.05 3/4

Recent Revisions in Brass Lists.

IN PRICE-LIST No. 4 of the American Brass Manufacturers, recently issued, a number of minor changes have been made and new matter added, as follows:

Roll and Sheet Brass.

On page 3 has been inserted, "Add for polishing on one side 40 cents per square foot; on both sides, double this price. Segments, Pattern Sheets and Circles cut from above metal of proportionate width, No. 10 and thinner, 6 cents per pound additional. Segments, Pattern Sheets and Circles cut from above metal of proportionate width, thicker than No. 10, 10 cents per pound additional. Patent Leveled Engravers' Sign Brass, not more than 80 per cent. discount on above list."

Slitting Metal.

On page 4 this explanation or definition has been parenthetically inserted: "Drawn strips are all metal drawn in dies, thinner than No. 8 Brown & Sharpe gauge; No. 8 Brown & Sharpe gauge and thicker, listed and sold as rectangular rod."

Sawed Metal.

On the same page is new matter, as follows: "All metal heavier than No. 6 Brown & Sharpe gauge, listed and charged as sawed metal, whether slit or sawed."

Printers' 2 x 4 Sheets and Galley Sheets.

On page 5 a reduction has been made on High Brass Screen Plates from net 15 cents per pound to net 13 1/2 cents per pound.

German Silver.

On page 7 where formerly the price for slitting German Silver was double that for slitting Brass, a decrease has been made, the charge now being uniform for either metal at the rate heretofore charged for slitting Brass.

Brazed Brass Tubing.

On page 9 the following provisions are now regularly a part of the list,

where before they were special and variously interpreted by individual concerns: "3-inch, per pound, 40 cents; over 3 inch to 3 1/2-inch inclusive, 45 cents per pound; over 3 1/2-inch, 50 cents per pound."

At the bottom of the page in the same classification has been added, "Combination Tubing, 60 cents per pound. For price on rectangular brazed Tubing, take diameter from shortest side and charge accordingly."

Brass Moldings.

On page 10 will be found new matter as follows: "Angle and Channel Brass to be listed and sold as Half-Round Molding." Immediately following this, the text has been entirely remodeled, and is now as follows:

High Brass Door Rail, 1 inch and wider. No. 18 Brown & Sharpe gauge and heavier, polished or unpolished, 36 cents per pound. Less than 1 inch in width, 40 cents per pound. Lighter than No. 19 Brown & Sharpe gauge, advance of 2 cents per pound for each number.

It will be noticed that the list given above as 36 cents was formerly 35 cents.

Trade Notes.

THE COOLEY SAD IRON COMPANY of Kansas City, Mo., have been incorporated, with a capital of \$9000, fully paid in. Herbert M. Cooley, William G. Hawes, Darwin Wentworth, Willard C. Parker, and Clarence S. Palmer are the incorporators.

THE GEORGIAN BAY MICA, MINING & MFG. COMPANY of Salamanca, Cattaraugus County, New York, have been incorporated at Albany, to mine and market minerals, including Mica, Copper, &c. The company's capital is given as \$60,000, and the directors named are John J. Inman, Nicholas L. Kysor of Salamanca, and Henry Harris of Parry Sound, Ont., Can.

THE NILES STAMPING COMPANY have been incorporated at Niles, O., with a capital of \$5000, by L. G. Hutchison, F. C. Robbins, J. F. Morris, Geo. B. Robbins and C. W. Perkins, for the purpose of buying and selling sheet metal and sheet metal products and to manufacture sheet metal merchandise.

The free class in architectural and mechanical drawing, at the Senior Evening School, 58 Fifty-second street, near Eighth avenue, New York City, was resumed on Thursday, January 3, 1895. Students of architecture, machinists, masons, carpenters and those working in handicrafts generally who wish to avail themselves of the opportunity offered by these free classes are invited to apply on any school evening after 7 o'clock.

A Chicago company are said to be desirous of furnishing illuminating gas in New York City at a charge of 90 cents and fuel gas at 75 cents per 1000 feet. Senator Sullivan is to introduce a bill in the New York Legislature to grant the company a charter.

The Belgian briquette industry is all that is making remarkable progress. Exports for the ten months of this year ending with October reached a total of nearly 500,000 tons, or double the amount exported in the corresponding period of 1892.

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CHICAGO, JANUARY 3, 1895.

Roofing Pitch 7/12 bbl.....	\$2.2
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THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, January 12, 1895.

DAVID WILLIAMS, - PUBLISHER

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ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....312 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 42 Cannon street, London, England.

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Index to Reading Matter.....Page 52.

The Passing of the Depression.

The New Year starts out with many evidences of improvement as compared with 1894. The most important of these is the increased employment now being given to workmen. A year ago "the army of the unemployed" was a significant phrase, as every community had its contingent of idle men, who were so numerous and so necessities that their existence was a menace to the public peace. Thrifty and industrious men, who had scarcely known a day of enforced idleness, found themselves utterly unable to secure work at any rate of wages and were compelled to subsist on charity. The public soup house was for the time a national institution. But since then a very great change has occurred. Disheartened business men and discouraged manufacturers have made a fresh attempt to do something and have gradually brought about a much more active condition of general trade. Thus idle workmen have again been furnished with employment, and few localities can now be found with any considerable number of unemployed, except from choice. Charitable organizations are continued, as they are needed in even the most prosperous times, but the class of people dependent on them is wholly unlike that of last winter.

Employment of Labor.

The distinct gain that has been made in this respect, which is of prime importance to the welfare of the nation, is apt to be overlooked in the dissatisfaction felt at the unprofitableness of business. But it shows that a very great stride has been taken in the direction of a complete recovery from the depression. The masses of the people must be employed to insure consumption of goods, and all sorts of products must be freely consumed to keep the wheels of commerce moving. The influences which dominate business are now moving in the right way,

and will necessarily continue to gather strength as they so move. The employment of additional men in one branch of industry enables more to be employed in other branches. That this movement is proceeding very satisfactorily is shown conspicuously in some instances which are, of course, exceptional. One of these, which happens to be in mind at the instant, is that of a large manufacturing concern, perhaps the most extensive in the country in its line, which had just completed an important addition to its plant when the panic of 1893 set in. The works were run with a light force for the remainder of the year and for the greater part of 1894, the new part being wholly unused from its completion. At the present time the entire establishment is running, including the new part, and the force of workmen employed is greater than ever before.

The Brightening Future.

No stronger evidence could be presented to prove that business is adjusting itself to the new conditions brought about by the great fall in values of the past few years, and particularly of the last eighteen months. It can safely be assumed that in the great majority of establishments now in operation methods have been or will be instituted whereby at least reasonable profits will be assured. The first great step is at least the partial restoration of the purchasing power of the people, and that can only be brought about by their full employment. A significant fact in this connection is the expansion in the production of pig iron, which is now proceeding at a rate approximating 9,000,000 tons per annum, or but little below the maximum output thus far attained. This being the basis of the iron industry, which is accepted universally as the barometer of general trade, the era of depression may be regarded as on the wane.

Politeness.

Politeness would appear to be one of the graces frequently considered unnecessary in the management of the shop. How often does the spirit of true politeness enter into the dealings of many foremen with their men whose work they direct? And because of the lack of it, how seldom do they receive from these men either the sympathetic or respectful obedience that is necessary to the most efficient management. Politeness should certainly not be confounded with familiarity or effeminateness, for it may go hand in hand with dignity of bearing and the most rigid enforcement of just orders. Its exemplification will always secure the respect of those who

come under its influence, and it cannot fail to raise the moral tone of the shop and to create harmony between employer and employed. Because the man in authority has the legal (but by no means the moral) right to speak impolitely and even abusively to his workmen, who in turn are ordinarily expected to hold their peace, there certainly rests upon the ruler the responsibility for any such condition as may result from ill-chosen words addressed to a workman. The golden rule is the rule of true politeness, and one may well hesitate if he thinks how his intended remark would sound if addressed to himself. How often the feelings of a conscientious workman are deeply hurt and his ambition chilled by the cutting, fault finding remark of his superior. A man with a conscience feels badly enough when he makes a mistake without being rudely treated because of it. It takes but a word politely spoken by his foreman to make him appreciate far more deeply his error than he would if he were angered by unjust criticism. A man has no excuse for impoliteness. He can acquire a manner that shall be more than merely just—a manner that shall express his desire to treat others as he would have them treat him, and he may rest assured that this acquisition will certainly raise him in the estimation of all with whom he is concerned.

Ventilation.

There are many readers who will peruse with interest the contribution by George D. Hoffman of Chicago, Ill., printed in another column, which deals with the all important subject of ventilation, a subject that is given too little attention in practice. In this country particularly, the healthfulness of fresh air is not sufficiently emphasized, but the recognition of its importance is happily growing, and all information relating to the methods of ventilating and the problems connected with it is sought by an increasing number. In Mr. Hoffman's article practical rules are given for figuring the velocity of air in ventilating flues, and those who do not care to work out the problem for themselves will be assisted by the table presented. What is said about the friction of air in passing through flues and openings is worthy of attention, as it is a matter too frequently disregarded. Altogether the article will well repay the attention of those who really care for fundamental information.

Elsewhere we print the substance of an invitation issued by a number of progressive manufacturers of Cincinnati to attend a meeting in that city

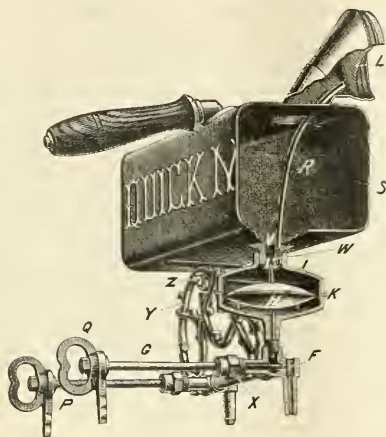
on the 23d of this month, for the purpose of forming a national association of manufacturers. Such an organization, if well conducted, must prove a splendid engine for the advancement of our producing interests. We need the efforts of an influential body to effect reforms and aid in the pioneer work of establishing American goods in the markets of the world.

Test of Fire Proof Material.

An interesting test of a recently discovered process for rendering wood work and textile fabrics practically fire proof was given in New York City on Saturday, January 5, before a number of officials of the Fire Department, the New York Board of Underwriters and several representatives of important rail road and steamship companies and other large interests. On a large vacant lot

The Quick Meal Tank for 1895.

The Quick Meal Stove Company of St. Louis, Mo., have been seeking for several years to produce a tank with a detachable and cleanable float for use in connection with their vapor stove, but it was not until recently that they succeeded in accomplishing the objects sought. The new tank which they are offering the trade possesses features of novelty which cannot fail to prove of interest to all handling stoves using gasoline as a fuel. The makers state that the construction is such that the tank will not vary one drop a minute, whether it be full or nearly empty. Reference is made to the ease with which it can be dismantled and all the parts cleaned. Referring to the accompanying illustration, which represents a section through the tank, H is the float and K its housing, both of which can be easily removed by taking out the bolts Z and unscrewing the joints. After this has



Quick Meal Tank for 1895.

at Fifty-eighth street and Broadway a small frame house was put up which was used for the experiment. The house was filled with pine shavings and kerosene oil, and the greater part of the wood in the structure was covered with the preparation patented by the Electric Fireproofing Company of New York City, who control the new process. Curtains which were hung at the windows had also been treated with the preparation. A fire was started in the building, which burned fiercely for an hour. Only those parts which had purposely been left unprotected by the fire proofing preparation were apparently affected so far as combustion is concerned. The curtains also hung in their places until the whole structure collapsed from disintegration. The experts present are reported to have expressed the opinion that this was one of the most severe and successful tests that had ever been given to any fire proofing process.

"Tectorium" is the name of a substance for window glass which has for some time been used in Austria, Italy, Germany, Switzerland and Russia as a covering for hothouses, verandas, windows of factories, roofs of stores, &c. It is described as an insoluble bichromated gelatine, translucent as opal glass, and incorporated in wire gauze.

been done the plug W can be removed, leaving an opening, V, into the main tank, which is said to be sufficiently large to freely permit the escape from the tank of any sediment it may contain. The parts can be replaced without trouble, there being no packing employed and all the joints are metallic. The heads on the tanks are not only soldered, but are double seamed on a special machine made for the purpose. The drip valves are provided with stuffing boxes, which the makers state will prevent leakage in case the valves become worn from long use.

The industrial classes of Rochdale, England, are about to celebrate the jubilee of the co-operation movement inaugurated in that busy and thrifty town. This celebration, says the *Labor Tribune*, is to be of a practical and sensible nature, as behooves so eminently sensible a movement. This movement, begun without pretension or parade, for 50 years has dispensed with fuss and feathers, and proposes to make the capstone of its jubilee a donation of \$5000 to the Rochdale Infirmary. The organization was formed in December, 1844, with 28 members, and a capital of \$140. The stock for their modest store in Toad lane was carried in a wheelbarrow. From this parent root no less than 1700 co-operative societies have come into existence, with 1,300,

000 members, an aggregate capital of \$90,000,000, the annual turnover being about \$250,000,000, and the profits about \$25,000,000 a year.

A National Convention of Manufacturers.

W. A. Procter, president of the Procter & Gamble Company; Thomas P. Egan, president of the J. A. Fay & Egan Company; Edward C. Hall, president of the Herring-Hall-Marvin Company; Charles Davis, president of the Lodge & Davis Machine Tool Company; Robert Laidlaw, president of the Laidlaw Dunn-Gordon Company; Jas. E. Mooney, president of the American Oakheather Company, and H. M. Lane, president of the Lane & Bodley Company, constituting a committee of the manufacturers of Cincinnati and Hamilton County, have issued a call for a convention of manufacturers to be held in Cincinnati on January 22, 1895, for the purpose of general interchange of views looking to the formation of a National Association of Manufacturers, which shall embrace among its purposes:

1. The cementing of a national organization of the manufacturers of the United States, for the purpose of considering national questions affecting their interests.
2. The advocacy of carefully considered legislation, to encourage manufacturing industries of all classes throughout the country.
3. The discussion of ways and means, whereby trade relations between the United States and foreign countries may be developed and extended.
4. The establishment in South American capitals and other desirable points of expositions for the display of American products.
5. The extension of the commercial marine of the United States.
6. The recognition of the Nicaragua Canal and the control of the same by the United States Government.
7. The re-establishment of reciprocal trade relations with foreign countries.
8. Such other topics as may be agreed upon by the convention.

It is desired that this convention shall be non-political, non-partisan and non-sectarian.

The invitation is without limit as to number of attendants, and is extended not only to accredited delegates from organized exchanges, representing manufacturing interests, but to any individual manufacturer who may have the promotion of the general good by organized effort at heart.

The following programme has been outlined:

Tuesday, January 22, 1895, 11.30 a.m., preliminary meeting at Odd Fellows' Temple; temporary organization, appointment of committees.

Wednesday, January 23, 1895, 10.30 a.m., meeting at Odd Fellows' Temple; hearing and discussion of reports of committees. Two p.m., reception and lunch at the Queen City Club; evening, 8 p.m., concert and entertainment by the Symphony Club of the Chamber of Commerce.

Thursday, January 24, 1895, 10.30 a.m., meeting at Odd Fellows' Temple; permanent organization, selection of headquarters, election of officers. Evening, citizens' reception and banquet to visiting delegates.

The secretary of the Committee of Arrangements is E. P. Wilson, Room A, Chamber of Commerce, Cincinnati, Ohio.

PLUMBING and GAS FITTING.

Master Plumbers of New York.

Owing to the regular meeting night of the Master Plumbers' Association of New York falling on a holiday, it was postponed until January 8, when a special meeting was called. At this meeting the annual election was held, and the following officers were selected for the ensuing year:

President, Henry G. Gabay, 892 Third avenue.

Vice-President, Henry J. Pattison, 258 West Eighteenth street.

Corresponding and Recording Secretary, Charles A. Schloesser, 359 East Fifty-eighth street.

Financial Secretary, I. J. Brown, 166 East Eighty-second street.

Treasurer, John Yule, 68 West Ninety-fifth street.

Marshall, J. G. Collins, 358 East 116th street.

Sergeant-at-Arms, Chas. J. Walsh, 10 Forsyth street.

Board of Trustees: James Gillroy (Chairman), 592 Park avenue; Wm Montgomery, 258 West Eighteenth street; John Mitchell, 113 Hudson street; Alexander Bryant, 12 East Twenty third street, and T. J. Tuomey, 1248 Third avenue.

A Suburban Water Supply.

The system of water supply shown in the accompanying illustration was put in operation by A. S. Brown of Norfolk, Conn., for one of his customers, the work being under the supervision of W. E. Case. The system has now been in operation for some time and is

system may be drained. After entering the house the $\frac{3}{4}$ -inch pipe rises to a faucet placed over the sink. After leaving the faucet the pipe is reduced to $\frac{1}{2}$ inch in size and rises 3 feet above the sink, when it makes a downward turn and runs to a tank in the barn. This tank is arranged with a $\frac{3}{4}$ inch pipe as an overflow to a tub 33 feet distant in the barnyard. An overflow from the tub in the yard runs 200 feet and wastes. As the water is running through the pipe all the time there is very little danger of freezing; however, to prevent such a possibility the pipe from the spring to the ram is $\frac{1}{2}$ inch below the surface of the ground and from the ram to the house is $\frac{3}{4}$ feet below the surface. It is not wrapped or in any other way protected from the frost.

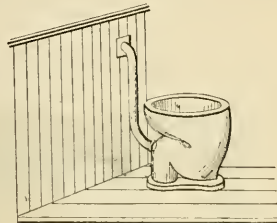
Lead Burning Class.

The day class in plumbing at the New York Trade School has been in operation one month under the superintendence of John Delehanty with the assistance of John McMenamy, Rutherford Clark, T. B. Walmsley, J. Wood and Thomas Kelly, and the boys are making rapid progress in the work. On next Tuesday the class in lead burning opens under the superintendence of T. B. Walmsley. Owing to the superior proficiency gained by the class last year under the instruction of Mr. Walmsley, the class this year opens with a surprising number of applications, 52 scholars having placed their names on the list, and others are unable to secure this course, not having filed their applications in time. That all these young men would not have frequent occasion to use lead burning as applied in the past is more than probable, but as a part of Mr. Walmsley's instruction he shows them how a plumber can use lead burning with advantage almost daily. The sim-

run by plumbers and heating men in their work.

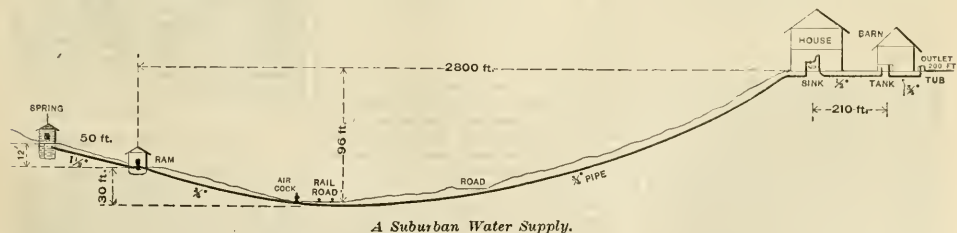
An Unventilated Vent.

From PLUMBER, Chicago, Ill.—According to the rules and regulations of the Department of Health, "all traps must be protected from siphonage by special vent pipes." The vent pipe is to connect with the increaser just below the roof, and is a very proper provision. Under some circumstances it is very inconvenient, or expensive, for the plumber to place a vent pipe so it will



An Unventilated Vent.

connect the water closet with the increaser. A case of this kind recently came to the knowledge of an inspector, and certainly shows the importance attached to the inspection of plumbing work. As shown in the accompanying sketch, the vent pipe started from the water closet in an orderly and proper manner. It continued to the wainscoted partition, at which point a square piece of sheet lead was tacked and a wiped joint made connecting the lead and pipe. It was supposed, of course, that the vent pipe extended into the partition and thence through the roof. For some reason the piece of sheet lead had sprung away from the



A Suburban Water Supply.

said to work perfectly. The water supply is taken from a spring which is located nearly 3000 feet from the house. The spring has been walled up so that it is 7 x 9 feet inside measurement, and has a depth of water of 6 $\frac{1}{2}$ feet. A No. 4 W. & B. Douglas ram is located 50 feet from the spring, at a point having about 12 feet fall. A $\frac{1}{2}$ -inch supply pipe is run from the spring to the ram. A $\frac{3}{4}$ -inch pipe runs from the ram to the house, having a fall of 30 feet to a point where it begins to rise, and making a rise of 96 $\frac{1}{2}$ feet from this point to the house. A cock is placed at the low point so that the

plasticity of his methods and apparatus have made many good lead burners much to the surprise of those who have been acquainted with lead burning as it is generally practiced.

In the past there has been some effort to create and maintain the idea that lead burning was a mysterious art, which only those who were especially gifted could acquire. To discover that there is a delusion needs only a visit to the school when the class are at work.

THE BEATON & BRADLEY COMPANY, Southington, Conn., are running their shop, making ceiling plates for the pipes

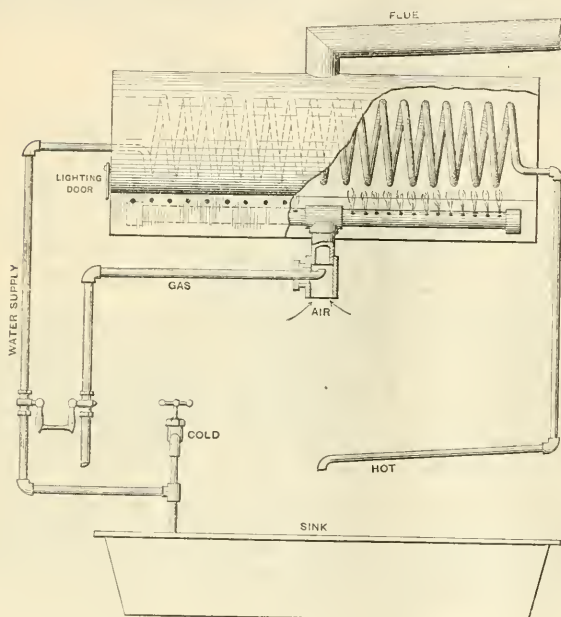
wainscoting so a knife blade could be inserted between, and what was the inspector's surprise when he discovered there was no pipe, as the vent was only "bumped" against the sheet lead and a joint made, leading one to suppose that the vent extended upward to the outer air. The boss was greatly surprised when this condition of affairs was made known to him and disclaimed all knowledge of the affair. As a result it is presumed the journeyman plumber who did the work in such an improper manner received all of the blame. It is perhaps unnecessary to state that the vent pipe was extended

to the pure air that is supposed to surround Chicago dwellings and that the plumber was put to considerable expense and trouble in making the change.

A Gas Water Heater.

From L. M. W., Delaware.—Some of your readers may be interested in the water heater which we are using in our shop. Being located near a junk dealer I noticed a copper coil about 6 inches in diameter and 20 inches long lying on a pile of iron all one summer and coveted it, though I had no use for it. When the winter set in we found washing our hands in cold water rather chilly, but with the chill came the junk dealer for a man to fix his stove grate. I told him I would do it myself if he would give me that old coil, to which he

the burner I put a nipple, then another T, open at the bottom to admit air, the gas entering the side of the T through a small tube that pointed up a little. I fastened the heater against the wall of the shop over the sink, and took a branch out of the cold water pipe just below the faucet, and ran it to the coil, putting a stop cock on it, and ran a pipe from the other end of the coil to a convenient place over the sink. I piped the gas supply to the burner with a stop cock on it near enough to the water cock to connect the levers. In operating either cock, both are opened or both are closed, and the gas flame is extinguished when the hot water is shut off. By this arrangement no faucet is needed on the hot water supply at the sink. Before this apparatus was constructed we had no means of getting hot water in the shop, which was heated



A Gas Water Heater.

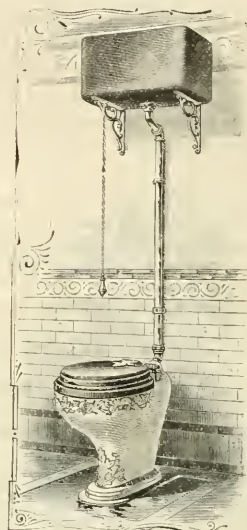
agreed. I heated the coil and bent it so that the ends pointed at a right angles to it, as shown in the picture. I then made a jacket of No. 24 galvanized iron 8 inches in diameter and 21 inches long, and cut a slot in it 2 inches wide and 19 inches long, and riveted to the slot an open top chamber 2 inches wide and 2 inches deep. Next I made a burner out of two pieces of 1-inch pipe, drilling $\frac{1}{4}$ -inch holes in them along on both sides $\frac{1}{4}$ inch apart and about one-quarter of the diameter apart the other way. The pieces of pipe were about 7 inches long with a cap on the end, and they screw into a T and set in the burner chamber. I fixed a baffle plate in the jacket, set the burner in place, and then fastened the coil in the jacket, after which I put a head in each end. One head has a hole in it for lighting the burner, and I punched a row of $\frac{1}{4}$ -inch holes along the slot 1 inch apart to give air to the burner. A 2-inch pipe with a damper in it leads from the jacket to the chimney. Straps riveted to the jacket hold the coil and burner in place. Into the T in

by a hot air furnace, and there was too much difficulty and expense in putting in a pipe coil attached to a boiler. One day the boss had been out with me and we both got our hands as dirty as moist soot could make them, and in the office he expressed a wish for hot water for washing up. As he knew nothing of my water heater I surprised him by saying I could furnish him with all the hot water he wanted in a minute at the shop sink. I invited him to the shop and opened the lighting door in the heater and struck a match, opened the stop cocks, lit the burner and in less than a minute he had water in abundance as hot as he wanted it. He gave me an order to make one for the office, which I placed under the basin and fitted it with a small pilot light. They both do good work, did not cost very much and use very little gas.

THE WELLS NEWTON QUAY COMPANY, Chicago, have moved their office from the first floor to Rooms 237-238 Monadnock Block.

Maelstrom Siphon Closet.

The Maelstrom is the name of a new siphon closet which Owen & Silter, Buttonwood and Twelfth streets, Philadelphia, are putting on the market. The accompanying cut shows the closet complete with seat and cover. The action of the closet is claimed to be strong and rapid and absolutely noiseless. These features are due to the arrangement of the water supply, which is divided at its entrance by means of



Maelstrom Siphon Closet.

arms on each side of the closet and carried to the flushing point, where the streams are again united. Another feature is the mode of securing the seat. As will be seen the fastening is effected by a clamp of pleasing design, which fits in a groove around the supply arm. This does away with the ordinary screw fastening, and insures a strong and perfect attachment which cannot become loose. The closet is claimed to work perfectly under any pressure, and, by reason of its manner of operation, to be free from odor. It is made of vitrified china, which will not craze, and in its construction the makers have aimed to secure durability.

Patronize the Plumber.

A commercial traveler writes in a local paper: I would like to call your attention to the statement that it is of "almost monthly occurrence that some 'Reuben' from the country blows out the gas while retiring for the night at the hotel where he may be stopping." I have been on the road for nearly 20 years and have found that a great many of the gas fixtures in the hotel rooms are sadly out of repair. It is quite often the case that when the stop or key is turned to shut off the gas it does not stop where it should, but turns around too far, thereby putting out the light, and at the same time letting on the gas again. I have found a great many fixtures out of fix as described above. It has often occurred to me that possibly some of the deaths charged to the veridacy of the lodger might well be laid to the carelessness of the landlord.

Philadelphia Master Plumbers' Association.

The annual meeting of the Philadelphia Master Plumbers' Association was held at the Builders' Exchange, Philadelphia, on Thursday evening last. After routine business was disposed of the election of officers for the ensuing year took place, the following being elected:

President, John E. Eyanson; vice-presidents, Geo. F. Ufer, Frank P. Brown, John Gormly, Wm. McCosch and G. Wallace Smith; recording and corresponding secretary, William S. Clark; treasurer, William Harkness, Jr.; directors, William S. Clark, Chas. L. Parmelee, Wm. Harkness, Jr., A. M. Hicks, R. Drummond, J. Sellers Pennock and John E. Eyanson, *ex officio*; sergeant-at-arms, Samuel B. Fleming.

The committee on the National Convention reported favorable progress of arrangements.

Some little discussion took place in regard to the proposed city ordinance regarding the opening of streets, under which the charges for permits varied according to the kind of pavement opened. There had been a meeting that day of the sub-committee of Councils' Committee on Highways appointed to consider the matter. Mr. Harkness, as the representative of the master plumbers, reported the result of his attendance before the committee. The president of the Operative Builders' Association had also attended the meeting and had stated that his association desired to have a fixed price for repaving ditches. Mr. Harkness endorsed the opinion of the operative builders. The city, he said, should take charge and there should be a fixed price for each opening. He had urged that a postponement of action be allowed in order that the matter might be discussed intelligently by the master plumbers. It had finally been arranged that a meeting between the plumbers and operative builders should be held on the 17th inst., and their representatives appear again before the sub-committee of councils on the following day, when some definite course of action would be agreed upon. A committee was accordingly appointed to attend the meeting next Thursday.

Mr. Harkness informed the meeting that an exhibit of the plumbing work executed by the boys in the Trade School of the Builders' Exchange would be placed in the permanent exhibition attached to the exchange.

The Plumbing class in the Trade School is filled to the overflowing point, and the showing so far is very satisfactory.

TRAPS AND VENTS.

MAYOR SCHIEREN of Brooklyn, N. Y., has appointed P. H. Gleason of 185 Fort Greene place on the Examining Board of Plumbers. The compensation is \$5 a meeting, for four meetings a month.

THE DAY, WARD COMPANY have moved into their new building on North Park avenue, Warren, Ohio. It is a substantial two story and basement structure of hollow tile blocks, and is a model establishment, heated throughout with hot water. Power is furnished by a 12 horse-power gasoline engine, and it will be lighted by an independent electric service.

PRITCHARD & Co., plumbers, have removed from Exchange street to Pickering square, Bangor, Maine.

THE SWAIN BATHTUB WORKS, 1707 Carpenter street, Philadelphia, have a capacity for turning out from 60 to 80 bathtubs per day and report that their business in copper, zinc and galvanized iron lined baths is on the increase.

E. COMFORT & Co., 921 Filbert street, Philadelphia, carry an extensive line of fine sanitary goods, in baths, closets and lavatories, in addition to their line of plumbers' brass goods and steam fitters' supplies.

DR. Z. TAYLOR EMERY, health commissioner of Brooklyn, N. Y., has appointed Wm. Paul Gerhard, C.E., to the position of honorary consulting sanitary engineer to the Department of Health of the City of Brooklyn.

ERION & DOME are a new plumbing firm at York, Pa.

THE ADVISABILITY of having a plumbing inspector is being discussed at Charlottesville, Va., where a new system of sewers is to be opened.

THE NEW LICENSES to plumbers and drain layers in Milwaukee, Wis., were issued last week by the Board of Public Works. There are 103 plumbers' licenses and 131 drain layers' licenses. Both plumbers and contractors lay drains.

S. DAVIS, N. 56 Beckman street, New York, is issuing a 16-page catalogue of Weeden's hotel and public building sanitary specialties. The first pages of the book are devoted to a waste preventing urinal, the use of which starts the flush. Three illustrations are shown of it. Next, a sloop hopper, working on the same principle, is shown. A scientific safety basin occupies the next pages, a sectional view showing how the water is siphoned out of the basin before it can overflow. The last specialty is a chair closet adapted for use in apartments where the appearance of an ordinary closet would be objectionable.

CARL JENNER, formerly with J. B. Farnsworth, Leominster, Mass., will open a plumbing establishment on his own account.

ON JANUARY 10 the Master Plumbers' Association of Brooklyn, N. Y., installed the officers elected to serve during 1895. They are: President, E. A. Macdonald; vice-president, H. L. Potter; recording secretary, H. M. Noble; financial secretary, John W. Kelly; treasurer, Geo. B. Lewis; marshal, J. J. Keenan; sergeant-at-arms, Joseph Zoll; trustees, Wm. C. O'Keefe, Thomas H. Radcliffe and Martin Fallon. Conference Committee, Wm. J. Gault, H. Anderson, Thomas H. Radcliffe, J. Manneschildt, M. F. Gleason and Martin Fallon. The ceremonies were in private and at some later date a public entertainment will be given.

JOHN P. GANLEY has been appointed Plumbing Inspector and Wm. H. Hudson has been appointed a member of the Examining Board of Plumbers at Hudson, N. Y.

P. E. Cox, Fort Wayne, Ind., has established a branch of his plumbing business at Columbia City, Ind.

THE PLUMBER will find articles both for himself and his customer at Lalanc & Grosjean Mfg. Company, 19 Cliff street, New York. They have an extensive line of ladles for pouring molten lead, those of smaller size for wiping joints on small pipe, increasing in size to large ladles for pouring lead in the joints on extra large soil pipe. They also have a large line of stamped steel sinks for bath, kitchen and pantry use, some being finished as polished steel and

others finished in enamel in different colors.

THE FOLDING BATHTUB COMPANY, Marshall, Mich., have increased the size of their plant by one-third, and added several new and improved machines for special work. The demand for their specialties was sufficient to keep their plant in full operation the whole of last year.

THE PLUMBERS of the different cities in Connecticut are co-operating in an effort to have a law passed at the next session of the Legislature to properly regulate plumbing and drainage in the State. The law will provide for an examination of plumbers and an inspection of plumbing work.

E. M. BROWN has withdrawn from the Clement & Brown Mfg. Company, Bangor, Maine, and in the future O. L. and F. G. Clement, under the same firm name at the old establishment, 133 Exchange street, will continue the business of manufacturing furnaces, stoves, &c., plumbing, steam fitting, tin and sheet iron work. The Mascot furnace has been a specialty of the concern.

ON JANUARY 1 the firm of P. McAuliffe & Son hung their sign to the public, at Augusta, Ga. This is the well known house of P. McAuliffe, plumber and gas fitter, with the addition to the firm of Theo. G. McAuliffe, who has been admitted as a partner. The firm will continue in business at 838 Reynolds street.

THE OFFICERS for 1895 of the Master Plumbers' Association of Paterson, N. J., are: President, James Kearney; vice-president, John Quinn; corresponding secretary, James T. McNab; financial secretary, William McKeon; treasurer, Edward Blair.

JAMES S. LINDLEY has sold his plumbing business, stock and tools to E. J. Winslow & Co., at Brattleboro, Vt.

THE MASTER PLUMBERS' ASSOCIATION of Cincinnati, Ohio, held its annual election at the Builders' Exchange last week. Nearly all of the members who number about 60, were present. The election resulted as follows: President, E. J. Nolan; vice president, Charles Atkinson; secretary, Frank Hopper; treasurer, James A. Gibson; sergeant-at-arms, Thomas Lynn.

PLUMBING INSPECTOR WAYSON of Detroit, Mich., was very busy last week inspecting the plumbing in a number of new and large buildings in that city.

IN THE ISSUE of the Boston Herald for Monday, January 7, were sketches of a number of firms of that city which had been in active business for 50 years or more. Among the number were the Dalton Ingersoll Company, manufacturers of fine sanitary appliances. We quote from the article as follows: "This house was established in 1845 by Dalton & Ingersoll, who conducted the business for years at 17 and 19 Union street, removing thence to their present commodious quarters of a five story building, 56 x 180 feet, at 160 to 175 High street, Fort Hill square. About two years ago the business was incorporated with a paid up capital of \$125,000, under the present style, thus perpetuating the names of the founders. The officers are Emery F. Souther, president, Charles W. Morse, treasurer, and William Scott, manager. These gentlemen are all natives of Massachusetts and devote their personal attention to the management of the enterprise. No house is more fully equipped for the proper transaction of its business, none more progressive and alert."

STEAM AND HOT WATER.

Steam and Hot Water Heating at the New York Trade School.

The three months' day class of instruction in steam and hot water heating was opened at the New York Trade School on January 2. This class began with a greater number of applications than was ever secured on the first opening of any of the classes in the different trades taught at the school. The lectures will be given by Thomas E. McNeill of Thomas E. McNeill & Son, heating and consulting engineers, 125 West Thirty-fifth street, New York. The manual instruction will be given by Charles Coolidge. Mr. Coolidge is well qualified for the position, having spent ten years with the Nason Mfg. Company in their pipe fitting department, and for the last four years as superintendent of the installation of such work as had been contracted for by William J. Baldwin, the well-known engineer.

Although the class has only been started a few days, some idea of its value may be gained from the remark of one of the pupils. The young man has worked at plumbing and gas fitting for four years and said: "I have already learned quite a good many valuable things about measuring for pipes, laying out work and putting up the pipe, that would have saved me much trouble had I known them in the past." The class is composed of:

Albert J. Logan, Brooklyn, N. Y.
Alfred D. Conant, Plainfield, N. J.
Arthur R. Thorpe, New Haven, Conn.
Arthur S. Ingersoll, Beverly, Mass.
Charles E. Scudder, Binghamton, N. Y.
Gavin N. Houston, East Orange, N. J.
George H. Brown, Chicago, Ill.
Herbert L. Moore, Cambridge, Mass.
J. Harvey Ward, East Orange, N. J.
Jacob J. Keller, New York City.
John A. Hempel, New York City.
Paul Mueller, Milwaukee, Wis.
Rudolph Ewald, Jersey City, N. J.
William H. Kroepche, New York City.

Armstrong Pipe Threading and Cutting Off Machine No. 2½.

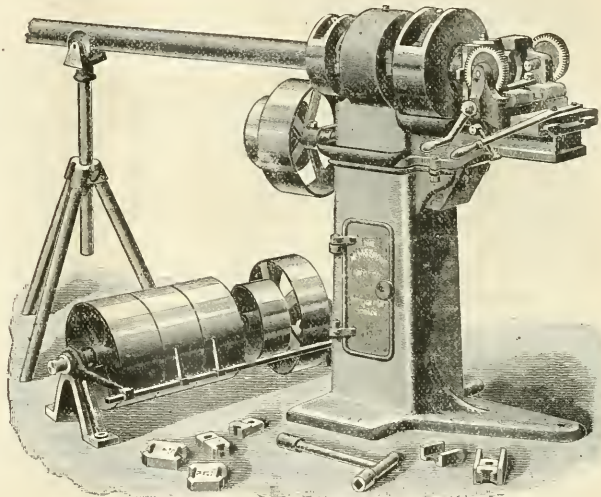
The illustration presented herewith shows an improved form of the No. 2 pipe threading and cutting off machine for hand or power, built by the Armstrong Mfg. Company, Bridgeport, Conn., and retains the many attractive features of that machine in addition to others peculiarly its own. It is described as very compact, rigid and dur-

able, and does not require the services of a skilled operator. All of the gears and working parts are inclosed in an oil tight chamber, which insures their perfect lubrication and effectually keeps out dust, dirt and chips.

Ease of operation and long life to the vital parts of the machine naturally follow, it is pointed out, as the result of this construction. A peculiar feature of the machine is that in its operation the pipe revolves instead of the dies, being held securely by tight gripping chucks.

For radiator steam coil works, &c., and other services where the greater number of pipes are comparatively short lengths, this is referred to as a

expanding dies without threading some of the pipe too large and some of it too small. This has been met, and, it is claimed, successfully overcome in the tool here shown; for although the dies are quickly opened after threading a piece of pipe, yet they may be as quickly closed together again without the least danger of variation, unless intentional. The weight of this machine is about 700 pounds; with counter-shaft, 850 pounds. Speed of counter-shaft should be about 225 revolutions a minute. The Armstrong Mfg. Company report a wide adoption of the No. 2½ machine among water, gas and steam fitters generally. The headquarters of the company are located at



Armstrong Pipe Threading and Cutting Off Machine No. 2½.

particularly desirable arrangement. The dies and cutting off tool are held stationary, and are opened and closed by means of a double geared crank handle, as shown. Expanding dies are used in connection with a self centering and powerful gripping chuck, insuring speed in cutting off and threading a pipe. These are of the regular Armstrong pattern, and are furnished to thread from 1 inch to 4 inches inclusive. Quick interchangeability of the various sizes of dies, coupled with a construction which permits of separate adjustment for three different sizes, enables the operator to thread pipe to suit all variations in ordinary fittings, and to open and close the dies any number of times without changing the adjustment. Again, either of the sizes may be used alternately without change of adjustment, or the dies may be quickly taken out, to permit of the free passage of the pipe to be cut off, and the adjustment still remain unchanged.

An objection frequently raised against machine using expanding dies is that the men are not skillful enough to use

Bridgeport, Conn., with New York offices and salesrooms at 139 Centre street.

Circuit System of Hot Water Heating.

From S. B. Dalton, Mass.—We have read with interest the account of piping a combination hot air and hot water furnace given by the Howard Furnace Company in *The Metal Worker* of October 20. We wish to inquire if such a system could be used satisfactorily in piping a common hot water boiler? If such a system can be used, would it work as well as with separate flow and return mains?

Note.—We shall be glad to have any of our hot water heating friends who have had experience with the circuit system express their views in answer to this correspondent. In order that he may have some information as a guide, we would say that a number of house heating boilers have been piped on the

circuit system with satisfactory results. It is probable that more skill, or rather a more thorough understanding of the science of heating, would be necessary in installing a satisfactorily working circuit system than would be required with a separate flow and return to each radiator. The article which appeared on October 20 calls attention to the fact that the radiators increase in size the further they are placed from the boiler, to offset the cooling of the water.

Automatic Expansion Tank.

We show in the accompanying illustration an automatic expansion tank brought out by the Ideal Boiler Company, 35 Dearborn street, Chicago, and 45 Oliver street, Boston. The tank is designed to be located in the bathroom or any other situation over the highest radiator and convenient to the water and plumbing system of the house. It is made of hard wood, dovetailed at the corners and lined with sheet copper, and can be supplied in any kind of wood to match the finish of the room. It is pointed out that the necessity for gauge glass and fittings, as well as the altitude gauge, is avoided. It is said

through a Y fitting and from the side instead of the top of the main. 3. Do not have the pitch of main from the radiator connection exceed 1 inch in 10 feet. This will probably prevent throttling. 4. Take expansion pipe from end of main that does not circulate. If throttling is the trouble, some one of these remedies will cure it, if there is not a pocket in the main; if there is it must be taken out.

Why we Ventilate.

A paper, from which we quote below, read by Louis Wilde before the Society of Minnesota Florists, discusses pure air and ventilation as necessities in a manner that presents the arguments from a new and impressive standpoint.

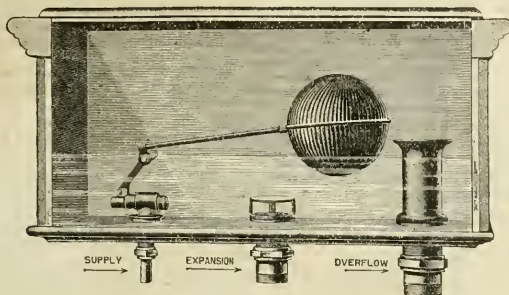
In experimenting with our roses under glass, I think that we go at it entirely too one sided. We pay too much attention to what our plants must have to eat and drink, so to speak, and too little or none at all to what they must breathe. In other words, we care too little about the air our roses have to live and grow in. As long as it does not appear foul to our sense of smell, and is not considered bad from our personal point of view, we are apt to regard it as all right for the roses, for-

space as our houses this will soon be used up. When carbon is not present in the air of our houses in sufficient quantity the plants will not grow vigorously. Its total absence means death to them. This, however, will rarely, if ever, occur, as no house can be built air tight, and on that account an exchange of air, however insufficient, will always take place. On the other hand, a small amount of carbon is also supplied by all decaying vegetable matter in the houses, such as sods and stable manures, so that even if a house be never ventilated the plants will not die at once, but as the supply of carbon is insufficient they will grow straggling and sickly. As plants are taking up carbon during daylight, we should have ventilation during that time, if at all possible.

We must further ventilate, as before stated, in order to regulate the atmospheric moisture of our houses. Moisture of the air influences indirectly the growing process of the plants in so far as its presence in smaller or larger quantity regulates the evaporation going on on the surface of the leaves, which evaporation in its turn gives rise to the flowing of the sap, thereby causing nutrition of the plants.

The Columbia Ceiling Plate.

The J. W. Chamberlain Company, Bangor, Me., have recently patented and are manufacturing the Columbia patent wall and ceiling plate, a view of which is shown in the annexed illustration. The device is so simply made that a brief description will suffice, and the advantages of its construction will be readily understood by referring to the engraving. The plate is designed to be used on all steam and hot water



Automatic Expansion Tank.

to be absolutely automatic in its operation. The size illustrated is adapted to hot water work to which there is attached 2000 feet of radiation or less.

A Heating Problem.

From Hub Boston, Mass.—In reading *The Metal Worker* of December 29 I noted the letter from "T. F. C.," asking for a solution of the trouble which he describes and illustrates with a diagram. I think the trouble is caused by the return water from the 60 foot radiator throttling that from the two radiators of 100 feet of surface. As he does not state the distance from the boiler to these two radiators, I take it for granted that it does not exceed 35 lineal feet if they are on the first floor, or 50 feet if on the second. It may be well to state that by throttling I mean that the return water from the 60-foot radiator being very much hotter than that from the two radiators, and the pipe being pitched up toward the two radiators, the hot water has a tendency to move toward them instead of back to the boiler. If the cause is what it appears to be it can be remedied in several ways: 1. The safest and cheapest way is to bring a separate return back to the boiler from the 60-foot radiator and enter it at the base of heater or bottom of return. 2. Make the return from the 60 foot radiator enter the main

getting that what is agreeable to us may not be to them, and *vice versa*.

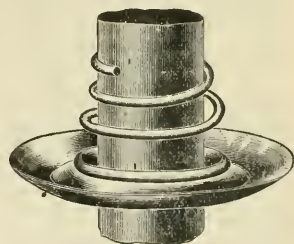
I have been through quite a number of rose houses, and what I have seen and the opinions I have heard expressed regarding ventilation are astonishing. One meets so called rose growers who have not the faintest idea why rose houses should be ventilated, neither do they know or suspect what influence the air exerts on the growth of the plants. Many consider ventilation an easy means of regulating the temperature of the houses rather than anything else, and, with them, opening the ventilators in cold weather means a needless waste of coal. There are growers who keep their houses shut tightly for two or three months at a time during cold weather.

In my opinion there are two good strong reasons why we should ventilate:

1. To change the exhausted air of the houses for the purer one without, full of the elements necessary for plant life.

2. To regulate the moisture contained in the air of our houses.

We all know that one of the most important substances which build up the tissues of the plant is taken directly from the air through the pores of the leaves and under the influence of light. I am referring to carbon. The air contains relatively only a very limited quantity of this element and important plant food. In such a comparatively small



Columbia Ceiling Plate.

pipe and is complete in itself, requiring neither screws, hooks nor other device to hold it in place. After it is put in position the spring is pulled taut and the work is completed. It will be understood that the expansion and contraction of the pipe will not affect the plate, which, it is said, cannot slip away from the ceiling, since it is held by the pressure of the spring, the spring giving with the expansion of the pipe and contracting as the latter contracts. The plate is made of stamped brass, nickel plated, and the spring of tempered steel, coppered. It is made in sizes ranging from $\frac{1}{2}$, 1, 1 $\frac{1}{2}$, 1 $\frac{3}{4}$ and 2 inches.

The steam and hot water heating trade will be interested in the new price lists of radiators just issued by the American Radiator Company, and which we print this week in the Trade Report. The regular and special lists are presented and reference made to a third list of the Favorite radiators, the entire output of which they handle.

HEATING NOTES.

THE IDEAL BOILER COMPANY of 36 Dearborn street, Chicago, and 45 Oliver street, Boston, have sent out a quaint circular, which cannot fail to attract attention. It is a large maroon colored card, printed in silver, with a yellow circular of smaller size pasted to one side of it. On the circular is the four-leaved clover of the company with the legend "A New Leaf for '95." On the inside pages of the circular are some very original remarks to buyers of boilers.

THE OLD STORE of the Cowles Couch Company, Hartford, Ct., will hereafter be occupied by a new firm, Couch & Hartley, who will engage in the general plumbing and heating business. Mr. Hartley was formerly connected with the Howard Furnace Company.

THE STANDARD RADIATOR COMPANY's general offices have been moved to their Chicago store, at 167-169 Lake street, and will be in charge of D. Paul Hughes, manager.

THE AMERICAN RADIATOR COMPANY of Chicago have arranged to open a branch office in London, England. Henry S. Downe, until recently one of the directors of the American Boiler Company of Chicago, will be in charge, having severed his connection with the latter company. Mr. Downe was born in Mason, N. H., and is 33 years old. Always accustomed to positions of responsibility, he was at one time superintendent of the Simonds Rolling Machine Company. He has been many years associated with the heating business in various capacities, and always with the leading companies engaged in the trade. He is a member of the American Society of Mechanical Engineers and is a graduate of the Worcester Polytechnic Institute. He was vice-president of the National Hot Water Heating Company when that company became a part of the American Boiler Company.

A NEW 20 ton cupola is in process of construction and nearly finished, at the United States Radiator Works, Dunkirk, N. Y. The cupola is the Whiting patent, very complete in all its workings, having a patent alarm when the metal rises, and other late equipments. It is 39 feet 6 inches high, with an incline hoist and scales. Another late improvement since the new foundry was built is the core drying oven, in which 1750 cores can be dried at one baking. A bushel of coke dries 450 cores. These improvements were made under the supervision and from plans of Jesse A. Fields and Thomas M. Burman, the superintendent and foreman.

S. STEPHENS, secretary of the J. F. Pease Furnace Company, Syracuse, N. Y., was a visitor in New York City this week.

THE FOSTER ENGINEERING COMPANY of Newark, N. J., report a rapidly increasing demand for their new "Class W." steam pressure regulators. Among orders just booked for large valves they mention: One 10-inch, for the Lehigh Valley Railroad Company coal mines; three 8-inch, and one 5-inch, for the Watts-Campbell Company for use at the Newark Electric Light and Power station; one 6-inch, for the U Street Pumping Station, Washington, D. C.; one 5-inch, for Dixon's Paper Mills, and two 6-inch and two 4-inch, for the new American liner "St. Louis." These latter are in addition to 20 regulators from 8 inch to 4-inch, furnished for that ship in December.

A CATALOGUE AND PRICE LIST dated January, 1895, distributed by the Foster Engineering Company, Newark, N. J., is entitled "Facts Worth Knowing About Pressure Regulators and Pump Governors of Practical Value to All Steam Users." The publication is a neat pamphlet of some 40 pages, containing illustrations of the regulators, both general and sectional, together with full descriptions of the devices. Many different regulators are shown, together with some other steam specialties.

THE ADVERTISING MATTER distributed by Gaylord & Eitapence, Binghamton, N. Y., is both serviceable and attractive. A pamphlet entitled, "What Other People Have to Say About Gaylord & Eitapence's Imperial Boilers," is a publication of portfolio style, handsomely printed on fine paper, and shows cuts of the Imperial boiler, both brick set and of portable form; likewise, illustrations of the separate parts are given. The bulk of the work, however, is taken up with illustrations of buildings in various parts of the country heated by Imperial boilers, and in connection with the illustrations are given testimonial letters from the house owners. At the end of the pamphlet is a table of sizes and prices, capacities, &c. Another advertising specialty of more than ordinary serviceableness is a plaque of ivory tinted celluloid, carrying a neat engraving of the Imperial portable boiler ready for piping. At the side of the boiler is a thermometer, which is mounted on the sheet and marked with wide black lines that permit its easy reading. The red liquid in the tube is also plainer to the eye than the customary mercury thread. Altogether it is a most serviceable souvenir and will be much appreciated by those receiving it.

THE HERENDEN MFG. COMPANY, whose Western office is at present at 131 Lake street, Chicago, with A. G. King as manager, are contemplating removal to larger quarters, where may be had a finer display of Furman steam and hot water boilers and heating supplies. The Chicago office of this company now handles the entire West outside of the coast and the State of Wisconsin, which is handled, as before, by E. A. Savage of Milwaukee.

THOMAS WEATHERED'S SONS are preparing to move their office to the Cornell building at 137-141 Centre street, New York, where they will display their line of hot water apparatus for heating residences and greenhouses.

T. J. DOUGLAS, representing the Richmond Stove Company, Norwich, Conn., passed through New York this week on the way West, where he will make an extended trip among the steam and hot water heating trade.

R. D. JACKSON, 89 Centre street, New York, Eastern agent for the Van Auken Steam Specialty Company, Chicago, reports an increasing demand among the trade for the Van Auken air valve.

FRANKLIN & BURNHAM, the New York representatives of the J. F. Pease Furnace Company, Syracuse, N. Y., have moved their headquarters to the building at Beekman and Pearl streets. Here they have a well lighted showroom in which they will display the Economy line of furnaces, steam and hot water apparatus and combination heaters.

JAMES W. BIRKETT MFG. COMPANY have opened an office at 105 Beekman street, New York, where they are pre-

pared to take orders for steam and hot water fitters' supplies.

THE EXECUTIVE COMMITTEE of the Master Steam and Hot Water Fitters' Association of the United States will meet at their headquarters in the Cable Building, New York, for the transaction of regular business at the same time that the American Society of Heating and Ventilating Engineers are in session during the fourth week in January.

AN EIGHT-SECTION 20-inch Niagara radiator connected with a small gas water heater is used as an auxiliary heater in the New York office, at 89 Centre street, of the Niagara Radiator Company, Buffalo, N. Y. This is a very attractive addition to the line of radiators that are on exhibition.

JOHN A. SCOLLAY, 74 Myrtle avenue, Brooklyn, has opened a very attractive office at 89 Centre street, N. Y. The floors are stained, with a handsome rug in the center, and the walls are frescoed in harmonious colors. Furniture of quartered oak adds to the surroundings. On a table the Scollay hot water thermometer is shown in its various styles in a nickel plated pipe stand, with literature pertaining to it and to the Scollay boilers for house heating and for greenhouse work. A platform is ready for the sample boilers that are being prepared to show the visitors from the steam and hot water heating trades.

THE STANDARD RADIATOR COMPANY of Buffalo, N. Y., have opened an office at 206 Centre street, which is under the management of John J. Leitch, formerly with Robert Leitch & Sons, Washington, D. C. The new headquarters fronts on Centre street and runs through to Baxter street, with a well lighted sample room and a large storage capacity. Samples of their varied line of radiators are being decorated for the showroom, and a carload of radiators for stock is being received. Mr. Leitch has just returned from a visit to Washington, where he has successfully brought the Standard radiators to the notice of the School Board.

J. J. WILSON called at the office of *The Metal Worker*, on his way to Troy, to visit the house he represents on the road, the Fuller & Warren Company. He reports some good sales recently in hot water apparatus and combination heaters.

Heating and Ventilating Engineers.

The Board of Managers of the American Society of Heating and Ventilating Engineers met on Thursday afternoon and completed the arrangements and programme for the annual meeting on January 22. The sessions will open at 10 o'clock on the morning of the 22d in the building of the American Society of Mechanical Engineers, at 12 West Thirty-second street, New York, and will continue three days. Members will receive next week copies of the programme, the features of which are the president's address, eight papers by members, selected topics for discussion and the election of officers. No special hotel arrangements have been made, as the place of meeting is in the midst of a hotel district of the city.

THE LETTER BOX.

Questions in Steam Heating.

From J. N. G., Peoria, Ill.—Please answer the following questions in *The Metal Worker*: What radiating surface will a 40 horse-power engine (plain slide valve) supply in 1-inch pipe, and what is an easy rule for figuring the same? What proportion should be used in factory and also in an office? In the disposal of condensed water should it be permitted to run by gravity into a closed receiver and pumped back into the boiler, or would you advise the use of a common float trap, with discharge to the sewer? What is the best and most practical method of building floor coils, manifolds and return bends, and what provisions are made to keep the pipes in place? Right and left return bends, which are the best? or are two pipe bracket coils to be preferred? What is the practical way of putting up miter coils along the walls, giving the grade and distance of supports for hook plates to screw on? What is the best position for air vents in these different coils, and, finally, what is the most suitable position for back pressure valve and live steam connection?

Answer.—The initial pressure of the steam in the boiler of the engine named not being given we will assume it to be 60 pounds gauge pressure. The engine being stated to be a plain slide valve engine, this implies absence of any special cut off more than can usually be effected with such a valve, or on the average a cut off of about three-fourths of the stroke. Under such circumstances of working it may confidently be assumed that if the engine actually develops 40 indicated horse-power it will discharge from its exhaust at least $45 \times 40 = 1800$ pounds of steam per hour. As usually applied 30 pounds of steam will supply per hour 300 feet in length of 1 inch pipe for heating, or, for an inside figure, say 270 feet, this being about 90 square feet of heating surface. We have, therefore, as a safe figure for the entire heating surface which can be carried by the exhaust of a plain slide valve engine developing 40 horse power, with 60 pounds boiler pressure, $\frac{1800}{30} \times 270 = 16,200$ feet run of inch pipe, or about 5400 square feet of external surface of such pipe. From this operation we may deduce a rule for calculating the amount of heating surface which the exhaust of such a steam engine will carry.

1. Ascertain the weight of water evaporated by the boiler per hour to run the engine, which may be practically assumed to be the weight of steam in pounds delivered at the exhaust.

2. Divide this weight by 30 (the number of pounds of steam required to supply about 90 square feet of inch pipe radiating surface) and multiply the quotient by 270; the result will be the number of feet in length of inch pipe which the exhaust steam will supply for heating purposes.

This weight of water evaporated per hour may either be calculated from indicator diagrams taken from the engine cylinder, or it may be experimentally determined by weighing the water fed to the boiler. The use of indicator diagrams is the most expeditious and easy way of arriving at the water consumption, but if care be taken an accurate result may be obtained by weighing the feed water.

The use of a float trap for discharge into a sewer of the condensed water would be very uneconomical practice. All the heat contained in this water and thrown away would thus have to be supplied to new feed water. Besides, water after having been evaporated and condensed is in the very best state for use again in the boiler, being freed from air, which is always absorbed in cool water freely exposed for some time to the atmosphere, and having deposited its mineral impurities that produce incrustation in the boiler. Instead, therefore, of allowing the condensed water to run to waste, it ought to be continuously returned to the boiler.

As to amount of pipe necessary respectively for factory and office, this should be estimated with reference to local conditions. If the labor performed in the factory required much muscular exercise, from 60° to 65° of temperature is as much as will be comfortable to the workmen. If the work is light and done by women, and if there is little or no artificial ventilation, such ventilation as is obtained in cold weather being by air entering through crevices at doors and windows, &c., 70° F. will be required; and if the factory floors are, say, as large as 25 x 50 feet in a reasonably well constructed building, a rough approximation to the amount of surface could be made by allowing for such floors 3 feet of inch pipe for every 100 cubic feet of space in the rooms, in a climate where the lowest outside temperature is about 10° F. This is for a large well built factory building, as, for example, a shoe factory containing, say, six such rooms, and employing 30 to 50 people in a room. For smaller establishments it might be necessary to

use 3 feet of inch pipe, or its equivalent heating surface, for every 80 or 90 cub'c feet of space in the rooms, or even more surface. Only from knowledge of the existing conditions can a proper estimate be made of the heating surface needed for any particular case. For offices the proportion of heating surface ranges from 3 feet of inch pipe to every 40 cubic feet of space to 3 feet for every 60 or 80 cubic feet, according to size, location, usual number of occupants, &c. It is impossible to give a general rule for amount of heating surface as related to size of rooms that will apply to every case.

If our correspondent is favorably located to obtain steam fitters' supplies he can buy coils of inch pipe cheaper than he can make them. It is rarely required to use right and left return bends in making up coils, except when manifolds are used, and unless the situation compels the use of manifolds the latter are not desirable. Plain flat coils of about six pipes with common return bends, if the situation admits, of from 10 to 16 feet in length, or two-pipe bracket coils, are the best whenever they can be used. If these cannot conveniently be purchased ready made they can be made on the premises by any steam fitter who is competent to do even the simplest job of steam heating work. Our correspondent ought not to make the mistake of supposing that such a job as he proposes can be well done by any one except a skilled steam fitter. As to air valves, they should be placed in or near the outlets of radiators. In flat wall coils the steam should enter the upper pipe of the coil and the steam and condensed water pass out of the lower pipe. An even number of pipes in the coil brings inlet and outlet valves to the same end of the coil, which is convenient. Six pipes high in flat coils work excellently.

The position of the valve for admitting steam to the heating system direct from the boiler, which is what we understand our correspondent to mean by "live steam connection," must be governed entirely by circumstances of which we have no knowledge. The most we can say is that the connection should be in a handy place for the engineer who has to use it, and our preference would generally be for an independent connection direct with the steam dome of the boiler. As to back pressure valve, if a suitable trap be used for returning the condensed water, such a valve will not be needed except when the trap needs attention. But a dia-

charge pipe to sewer, attached to pipe leading to trap, with a common discharge trap, ought to be provided, to meet cases whenever some repair or adjustment of the return trap is needed, and the necessary valve in the pipe would, we should think, then be the only back pressure valve needed.

If box coils are to be used they should be purchased direct of the manufacturers of such coils, as they can be bought much cheaper ready made than they can be constructed on the premises, and will be tested and guaranteed by the makers. Such coils will have the needed inclination of pipes, and only have to be set level on proper supports, which are also supplied by the manufacturers. Plain flat coils may be made on the premises. The component pipes of such a coil ought to have an inclination of 1 inch in 16 feet or 1 inch in 12 feet, if this can be got conveniently. Supports for such coils can be bought from any dealer in steam fittings, designed for attachment by screws to wall cleats of wood. About 6 to 8 feet between supports is a usual distance for coils of from 12 to 16 feet in length, and ten feet is near enough for very long coils. For mid floor positions box coils are preferable, as occupying less space. For a mid-floor flat coil supports of $1\frac{1}{2} \times \frac{1}{2}$ inch merchant bar iron bent at an angle to get a foot that can be screwed to the floor, and drilled or punched to receive through bolts on which the pipes can rest, can be made by a local blacksmith.

In calculating surface for inch pipe coils estimate each return bend as the equivalent of 7 inches length of inch pipe. This is not exact but near enough for practical purposes. Thus an inch coil with 60 feet of inch pipe and 12 return bends would have a surface about equal to 87 feet run of inch pipe alone.

Double Furnaces.

From W. S., Baltimore.—When a building is to be heated by means of a warm air furnace, it is usual to employ a single furnace for the purpose, and one that is supposed to be of sufficient heating capacity to warm the building during the coldest weather. Such a furnace would naturally be much too large for heating the building during mild weather, as it would be difficult to keep the fire burning properly without producing more heat than was required. I would like to inquire of the readers of *The Metal Worker* what experience they have had with double furnaces. That is, two small furnaces, their united capacity being sufficient to properly warm the building, and set near to each other and connected by means of a double bonnet. From this bonnet the pipes would be connected with the rooms above in the usual manner. The cold air box could be provided with branches, so that each furnace would receive its proper supply of air. A damper or slide placed in each branch would enable one to regulate the supply of air to each furnace, or shut off the supply if one of the fur-

naces was not in operation. With only one furnace in use, it is probable the pipes over this one would receive the most heat, but this defect could be obviated to a great extent by regulating the pipe dampers and the registers. The advantages to be derived from this plan would be that during mild weather only one furnace would be used for heating, thus saving fuel. During cold weather the two furnaces would be required.

Kerosene as a Wood Preservative.

From LAMBERT, STOUTON & COOPER Philadelphia, Pa.—On page 28 of *The Metal Worker* of December 29 we notice an inquiry from Summit Station, N. Y., as to the preserving qualities of kerosene oil, &c., on wood. For your correspondent's guidance, we would say that crude petroleum is decidedly the best for the purpose he wishes to use it, but we believe that Fernoline is still better than the oil. The latter is used by pile drivers along the Atlantic Coast, and also by railroad companies in some parts for preserving wooden ties. The cost of the latter is more than the former, and if your correspondent would like to know more about it we will furnish him with all the information we possess if he will address us on the subject.

Choked Water Backs.

From J. W., Virginia.—The water front in a kitchen range, in this place located in a basement somewhat lower than the main pipe in the street, fills up with lime incrustations about once a year, or sometimes in less time, and has to be replaced with a new one, thereby submitting the owner to no small annoyance and expense. Can you explain the cause of this or suggest a remedy? Is the fault with the range or plumbing? Other ranges similar in construction, except that they are higher than the water main, are not affected in this way.

Answer.—Our correspondent's case would be a simple one, except for his statement that his range chokes up once a year, while others above the water main do not. We do not see what influence the position of the range has in the matter. We think it more likely that the higher ranges have larger water back connections, or for some other reason are not subject to the trouble. This matter has been discussed in the past in *The Metal Worker* and various remedies have been suggested. Our correspondent is, of course, aware that the difficulty is due to the water depositing the lime held in solution, and this forms a crust, the same as it does in steam boilers. The last time the matter was discussed in our columns three separate remedies were suggested. The first was that the water back connections be made of $2\frac{1}{2}$ inch pipe, so that the incrustation would take a very much longer time in forming. This delayed, but did not remedy the trouble. A second suggestion was to make the water back a secondary heater—that is, the connections were made to a coil within the range proper and there was a little expansion tank connected with the upper

pipe. In this way the same water was used over and over again and transmitted its heat to the water in the range boiler. After the first deposit had been made there would be no further accumulation. A third suggestion was that the trouble would be obviated by preventing the water ever reaching the boiling point. The correspondent who made that suggestion said that by reducing the size of the water back so that the temperature of the water was kept below the boiling point the alkali was not deposited. He had followed this practice with great success in places where much trouble was occasioned by alkali water. We trust some of these suggestions may prove of assistance to our correspondent.

Rusting of a Tin Roof.

From W. B. K., Penn's Grove, N. J.—In answer to the inquiry of "R. H. C.," Grafton, Ill., that appeared in *The Metal Worker* of December 22 about rusting of a tin roof on the bottom, I think he will find that the shingles have been penetrated by either steam or gas from the room below. My opinion is that IC terne, well painted on both sides and kept painted on the top, will last from twenty to thirty years. Putting tin over old shingles is quite practicable, and if a cleat board is used the work can be done as smooth and flat almost as over sheathing. The first thing to take into consideration before putting on a roof is to find out what the room below is to be used for. If for a laundry it is necessary to sheath the roof as tight as possible, and then to use oiled sheathing paper and paint the bottom side of the tin well with metallic brown. If over bedrooms or ordinary dwelling lofts it is not necessary to use either sheathing paper or paint, as the underside of the tin is not apt to rust through in such places. I had a roof last year to take off, and put on a new one, on account of gas from the lodge room caused by stove gases ascending from the room through a ventilating ceiling register in the loft. The ventilator in the roof was, through an oversight of the tinner who had put on the first roof, made independent of the ceiling ventilator and not connected directly with it.

Base Burning Stoves.

From H. H., Rochester, N. Y.—Please inform us through *The Metal Worker* when and by whom base burning stoves were invented?

Note.—It is generally supposed that the first magazine or base burning stove designed to heat rooms was patented by David Ritz in the year 1770. The principle was applied by James Watt, who, in 1785 was granted a patent for a magazine steam boiler furnace, in which the base of the fuel only was exposed to the direct action of the fire. If our correspondent is interested in going into the subject of the base burning principle a little deeper, he will find in *The Metal Worker* of May 3, 1890, an article entitled "History of the Base Burning Principle as Applied to Stoves, Furnaces, &c.," and in the issue of the paper for June 12 of the same year will be found another article bearing on the subject.

TIN PLATES.

Net Weight of Tin Plates.

Through the courtesy of Bruce & Cook, Water street, New York, we are permitted to reprint from their calendar the accompanying valuable table, giving the net weight per box of tin plates, computed on the basis of 10 x 14, 225 sheets; or, 14 x 20, 112 sheets. Referring to this table in their New Year's circular they say:

"During the last few years plates lighter than the old standards have come into such general use that we have made up a table showing the net weights of all leading sizes, and at the

24-inch hot mills and four 20-inch cold mills, but room has been provided for four more hot mills and three more cold mills, making a total of ten hot mills and seven cold mills. The mill buildings will be made of iron. The tinning house and packing room will be of brick. The hot mill building will be in size 70 x 140 feet and 20 feet high from floor level to lower chords, with shed to cover heating and pair furnaces 20 x 140 feet, and shed to cover annealing furnaces 25 x 140 feet. The cold rolling mill building will be 62½ x 140 feet, 24 feet high from floor level to lower chords, with

ping machines, one double and one single dusting machine, one Gray picking machine, one 1000 horse-power heater, two boiler feeding pumps, each large enough to supply ten 100 horse power boilers with water; one steel water tank, one 38 inch roll lathe, 60 annealing boxes, and all the floor plates required about the plant. The entire plant was designed by F. I. Freeman, the mechanical engineer of the Totten & Hogg Iron & Steel Foundry Company, who will himself, assisted by his son, S. L. Freeman, take charge of the erection and starting of the plant at Martin's Ferry. The Totten & Hogg Company also have an order for changing the nail plate train, which was built by them for the Laughlin Nail Company many years ago, into a train for rolling the sheet bar for the new plant and to furnish the new shears and roller tables for same. This arrangement enables them to cut the sheet bar to proper lengths as fast as it is rolled.

Net Weight Per Box Tin Plates.

Basis 10 x 14, 225 Sheets; or, 14 x 20, 112 Sheets.

Trade term	80lb.	85lb.	90lb.	95lb.	100lb.	1C	1X	1XX	1XXX	1XXXX
Weight per box, lbs.	80	85	90	95	100	107	128	135	156	196
Size of sheets										
10 x 14	245	81	85	90	95	109	107	123	135	178
14 x 20	112	89	88	90	93	100	107	128	135	159
10 x 20	225	114	121	129	136	143	153	163	198	223
11 x 11	225	69	73	78	82	86	92	111	117	135
11 x 22½	225	138	147	156	164	171	184	222	234	270
12 x 12	225	82	87	93	98	103	110	132	139	160
12 x 24	112	82	87	93	98	103	110	132	139	160
13 x 13	225	97	103	109	115	121	129	154	163	188
13 x 26	112	97	103	109	115	121	129	154	163	188
14 x 14	225	112	119	126	133	140	150	179	189	218
14 x 28	112	112	119	126	133	140	150	179	189	218
15 x 15	225	129	137	145	153	161	172	206	217	251
15 x 30	112	129	137	145	153	161	172	206	217	251
16 x 16	225	146	155	163	171	179	196	234	247	285
16 x 32	112	146	155	163	171	179	196	234	247	285
17 x 17	225	165	175	186	196	206	221	264	279	322
18 x 18	112	98	103	109	116	122	129	148	156	180
18 x 36	112	103	110	116	122	129	138	166	174	201
19 x 19	112	114	121	129	136	143	153	183	193	223
20 x 20	112	126	134	142	150	158	166	202	213	246
21 x 21	112	138	147	156	164	172	184	221	234	270
22 x 22	112	151	161	170	179	189	202	242	255	293
23 x 23	112	164	175	185	195	204	220	264	278	321
24 x 24	112	183	195	207	219	228	246	300	316	362
25 x 25	112	200	213	226	239	248	267	326	343	398
26 x 26	112	217	231	245	259	268	288	352	370	427
27 x 27	112	235	250	265	280	289	310	380	400	460
28 x 28	112	254	270	286	301	310	332	404	425	487
29 x 29	112	274	291	308	324	333	356	438	460	523
30 x 30	112	295	313	331	348	357	381	464	487	551
31 x 31	112	317	336	355	373	382	407	494	518	583
32 x 32	112	340	360	380	400	409	435	524	549	615
33 x 33	112	364	385	406	427	436	463	554	580	647
34 x 34	112	389	411	433	455	464	492	584	610	677
35 x 35	112	415	438	461	484	493	521	614	641	708
36 x 36	112	442	466	490	514	523	552	646	673	740
37 x 37	112	470	495	520	544	553	583	676	703	770
38 x 38	112	499	525	550	575	584	614	708	735	802
39 x 39	112	529	556	582	607	616	647	742	769	836
40 x 40	112	560	588	614	640	649	680	776	803	870
41 x 41	112	592	621	648	674	683	714	810	837	904
42 x 42	112	625	654	682	708	717	748	844	871	938
43 x 43	112	659	689	717	743	752	783	880	907	974
44 x 44	112	694	725	754	780	789	820	918	945	1012
45 x 45	112	730	762	792	818	827	858	956	983	1050
46 x 46	112	767	799	830	856	865	896	994	1021	1088
47 x 47	112	805	838	869	895	904	935	1034	1061	1128
48 x 48	112	844	878	909	935	944	975	1074	1101	1168
49 x 49	112	884	919	950	976	985	1016	1116	1143	1210
50 x 50	112	925	960	991	1017	1026	1057	1157	1184	1251
51 x 51	112	967	1003	1034	1060	1069	1100	1200	1227	1294
52 x 52	112	1010	1047	1078	1104	1113	1144	1244	1271	1338
53 x 53	112	1054	1092	1123	1149	1158	1189	1289	1316	1383
54 x 54	112	1100	1138	1169	1195	1204	1235	1335	1362	1429
55 x 55	112	1147	1186	1217	1243	1252	1283	1383	1410	1477
56 x 56	112	1195	1235	1266	1292	1301	1332	1432	1459	1526
57 x 57	112	1244	1285	1316	1342	1351	1382	1482	1509	1576
58 x 58	112	1294	1336	1367	1393	1402	1433	1533	1560	1627
59 x 59	112	1345	1388	1419	1445	1454	1485	1585	1612	1679
60 x 60	112	1397	1440	1471	1497	1506	1537	1637	1664	1731
61 x 61	112	1450	1494	1525	1551	1560	1591	1691	1718	1785
62 x 62	112	1504	1549	1580	1606	1615	1646	1746	1773	1840
63 x 63	112	1560	1606	1637	1663	1672	1703	1803	1830	1897
64 x 64	112	1617	1664	1695	1721	1730	1761	1861	1888	1955
65 x 65	112	1675	1723	1754	1780	1789	1820	1920	1947	2014
66 x 66	112	1734	1783	1814	1840	1849	1880	1980	2007	2074
67 x 67	112	1794	1844	1875	1901	1910	1941	2041	2068	2135
68 x 68	112	1855	1906	1937	1963	1972	2003	2103	2130	2197
69 x 69	112	1917	1969	1999	2025	2034	2065	2165	2192	2259
70 x 70	112	1980	2033	2064	2090	2099	2130	2230	2257	2324

basis weights most in use. This will enable you to tell at a glance the weight of the different sizes and thicknesses, and also to be sure that weights received are same as ordered without a long calculation."

There is not a little complaint of the selling of light weight plates for standard, but where it is suspected the use of this table will enable the purchaser to readily check all doubtful boxes.

A New Tin Plate Plant.

The Totten & Hogg Iron & Steel Foundry Company of Pittsburgh, Pa., manufacturers of rolling mill, tin plate machinery and engines, have just received one of the largest orders that has been placed with any Pittsburgh company for many years. This order is from the Laughlin Nail Company of Wheeling, W. Va., and is for a complete tin plate plant. The plant will be erected at Martin's Ferry, Ohio, and when completed will be one of the finest, largest and best arranged tin plate plants in the United States. The machinery to start with will consist of six

sheds to cover annealing furnaces 25 x 80 feet. The boiler house will be 40 x 88 feet. The tinning house will be 60 x 75 feet, and the packing room 60 x 50 feet. Both the hot and cold mill buildings will be provided with traveling cranes. The Totten & Hogg Iron & Steel Foundry Company have the contract for everything complete, from the ground up, including buildings and furnaces. The machinery they furnish will consist of hot mills complete, with all the doubling and trimming shears; cold mills complete; a 1000 horse-power Ethna rolling mill engine complete, with gears and countershafts for driving hot mills; a 700 horse-power Ethna rolling mill engine complete, with gears and countershafts for driving the seven cold mills; a 100 horse-power engine with line shafting, bearings and pulleys, for driving doubling and trimming shears, and a 75 horse-power engine for driving the tinning house; a boiler plant complete, to supply steam for the four engines; all the machinery for the tinning house, consisting of six Thomas & White, one Phillips and one Morewood tinning machines, six bran-

SCRAP

A UNITED PRESS CABLE DISPATCH from London of January 6 reported as follows: "Many tin plate works in the Swansea district are closing their contracts. Some 3000 men were discharged yesterday in accordance with previous notices. The cause of the reduction is the decrease of the American demand. T. N. Hood, London agent of the Glamorgan Tin Plate Company, told the United Press correspondent yesterday that some time ago the Welsh tin plate works extended all their facilities in anticipation of a heavier demand from the United States, but the demand had not come and the new plants are useless. Tin plate prices now, he said, were the lowest on record." From other sources of information it appears more likely that the closing down of so many works is primarily due to the failure of the makers to come to a settlement of the wage question with their workmen.

THE ANNUAL REPORT of the New York Chamber of Commerce for the fiscal year ending June 30, 1894, places the value of foreign tin andterne plates and tappers tin entered at this port during that period at \$7,167,814. The aggregate receipts at all other ports are estimated at \$7,442,474, making the total value of tin plate imports \$14,610,488.

IN OUR ALPHABETICAL LIST of American tin plates in last week's issue the name of Clifton, a bright charcoal plate, manufactured by Follansbee Bros. Company, successors to James B. Scott & Co., Pittsburgh, Pa., was inadvertently omitted, although noted opposite the firm's name on page 42.

THE PROJECT of erecting a co-operative tin plate plant by former employees of Wallace, Binfeld & Co., Limited, at Irondale, Ohio, has been abandoned.

THE CRESCENT SHEET & TIN PLATE COMPANY, Cleveland, Ohio, expect to begin the manufacture of black sheets about April 1. The company will open

rate this department of their plant first, and later on the manufacture of tin andterne plates will be taken up. The buildings now in course of erection are a steel hot mill building, 105 x 175 feet, and a combination building containing the annealing, pickling, cold rolling, tinning and warehouse departments, which will be all steel and brick, 105 x 168 feet, with a wing 48 x 48 feet. The buildings are being put up by the Shiffler Bridge Company of Pittsburgh. The Industrial Works, Bay City, Mich., have the contract for the supply of two electric cranes, and the Elwell-Parker Electric Company, Cleveland, Ohio, will furnish a generator to run these cranes, together with 15 arc and 60 incandescent lights.

THE JUNCTION IRON & STEEL COMPANY of Mingo Junction, Ohio, formerly the Junction Iron Company, and who succeeded to the business of the Laughlin & Junction Steel Company recently, announce that after February 25 next they will be prepared to supply soft steel tin plate and sheet bars "boshed," and cut to any desired length and rolled to any thickness from $\frac{1}{4}$ inch up; also small steel billets from $\frac{1}{4}$ inch, square or round, up to 3 inches. These billets will be of the grade of goods known as raw materials for the manufacture of street and railway cars, agricultural implements, bolts, wagon and carriage axles and many other lines of iron and steel goods. Contracts have been placed for the additional machinery, and the work of installing will go forward as rapidly as possible.

THE TIN PLATE PLANT of the Ellwood Tin Plate Company, Ellwood City, Pa., is now in operation to nearly full capacity. Three mills are running, and the tinning department will probably be put in operation this week. As is already known, this concern are running on a non-union basis, and have experienced but little difficulty in finding competent workmen as fast as places could be made for them.

THE MONTHLY RETURNS of the British Board of Trade for December show the total exportation of tin plates from British ports during that month to have been 38,000 tons, against 23,000 tons in December, 1893. Of this amount 24,000 tons were shipped to the United States, as compared with 14,000 tons in the last month of the previous year. The total exports of tin and terne plates from Great Britain to this country last year aggregated nearly 205,000 tons against 255,500 tons in 1893, a falling off of over 50,000 tons.

THE AMERICAN TIN PLATE COMPANY, Ellwood, Ind., will start up a new addition of four mills about January 15 when some 250 more men will be given employment at their works.

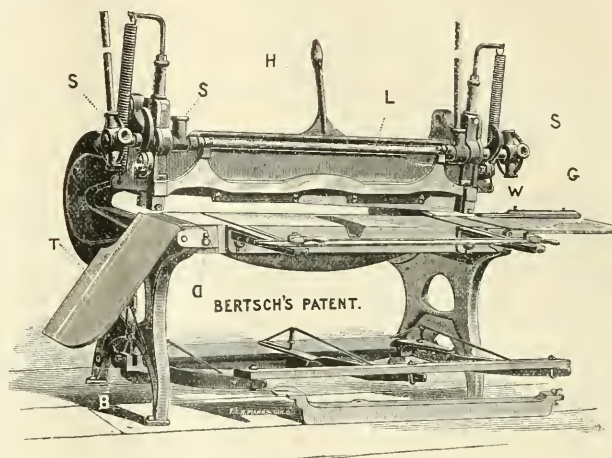
A CABLE from Liverpool, England, announces the death on January 6 of Henry Nash, the head of the well-known house of Henry Nash & Co., tin plate and metal merchants of that city. Mr. Nash, who was among the most prominent members of the trade, was well known in the United States as representing a number of the largest metal houses in this country.

BENJ. MORRISON, who for some time has acted as the representative of N. & G. Taylor Company, at 23 Water street, New York City, has resigned his position and severed his connection with the firm. Mr. Morrison will, it is understood, embark in the metal business on his own account.

THE CALENDAR for which we are indebted to Jam. S. A. Coe & Co., 106-108 Mulberry street, Newark, N. J., is an exceedingly appropriate and handsome publication. The calendar proper, which is a pad of 12 leaves attached to the bottom of the card, is neatly printed and plain, and carries beneath it the full calendar for the year in blue ink. The feature of the publication, however, is the card itself, which has a background of silver that is a perfect imitation of fine terne plate. The firm name, with the announcement "Iron and Steel, Bright Tin, Roofing Plate, Copper, Zinc, Solder, Carriage and Heavy Hardware," is printed in white, with a blue shade line.

Extra Heavy Gap Shear.

We show in the accompanying illustration a type of the extra heavy No. 22 5-foot 15-inch throat gap shear for No. 14 iron, built by Bertsch & Co., Cambridge City, Ind. The patent



Extra Heavy Gap Shear.

lever attachment L in front of the knife bar has extra heavy sockets, S, at both ends, and is also operated in conjunction with the treadle for heavy work. For ordinary or light work the treadle can be used entirely independent of the lever. It is pointed out that with this attachment the gap shear is complete, and for squaring and slitting is practically two machines in one. It is made for all lengths up to 6 feet or longer for light work, with 12, 15, 18 and 21 inch throats. The shears are made to be operated by either hand or power. Particular attention is called to the patent extension drop leaf table with parallel gauge, G, which is described as indispensable for continuous accurate cutting of long sheets. It is also pointed out that it will facilitate the work and avoid marking off in slitting and trimming sheets, as the gauge is adjusted in line with the blades, properly guiding the sheet through the throat. The extension table on the left has suitable parallel shearing lines, T, for trimming, and a special shear line indicator is attached to the last cutting end to indicate the cutting edge of the lower blade, which can be seen at the end when cutting metal that is longer than the blades.

Trade in Tinner's Tools.

A firm of Eastern manufacturers, making a heavy line of tinsmiths' machines and tools, writing on the condition of trade refer to the three kinds of competition which they have to struggle with, and classify them as follows:

1. *Honorable Competition.* This seeks to improve the quality of its product and cheapen its cost of production, giving to buyers their just share of such improvement.

This kind of competition benefits everybody.

2. *Ignorant Competition.* This rises from inexperience, or from careless or defective bookkeeping. The manufacturer does not know what his goods cost, nor how much to allow for incidental expenses and unforeseen emergencies. Consequently his selling prices demoralize the market for a time, resulting at last in his own ruin. Then his plant goes into a receiver's hands, his stock is sold be-

low cost and his plant is bought up by some speculator as ignorant as himself, and the same experience is repeated over and over again till the last brick and the last dollar are gone.

This kind of competition benefits nobody.

3. *Rascally Competition.*—In this the competitor sells deliberately and knowingly on an insufficient margin, either for the sake of grasping the whole world or of ruining his competitors.

This kind of competition is the bane of business, and pleases no one but the devil and his angels.

Almost all the East Liverpool, Ohio, potteries started into operation last week on full time.

The *Journal of Commerce* estimates the fire losses of the United States and Canada for the year 1894 as \$127,450,000. The 1893 losses were \$158,445,875 and those of 1892 \$133,704,700.

The Philadelphia *Ledger* estimates that the production of anthracite coal in 1894 will aggregate over 41,000,000 tons, a decrease of over 1,600,000 tons compared with the output of 1893.

ROOFING AND CORNICE.

National Association of Iron Roofing Manufacturers.

(By Telegraph.)

The ninth annual meeting of the National Association of Iron Roofing Manufacturers convened in parlor A of the Burnett House, Cincinnati, Ohio, Thursday, January 10, with President E. E. Souther of St. Louis in the chair. At 9 a.m., the meeting having been called to order by the chairman, an invitation was extended to the manufacturers of galvanized iron conductor pipe, eave trough, elbows and fittings, who had met on Wednesday for the purpose of organizing an association, to be present, which was accepted by many.

After a speech by the president the report of the Executive Committee was read and adopted, as was also that of Secretary and Treasurer Hyndman. The appointment of a committee to nominate officers to serve the ensuing year, composed of A. L. Andrews, J. E. Annis and E. C. Ewing, was followed by a resolution, which was carried, to omit the No. 27 gauge when quoting prices on corrugated or roofing iron, and otherwise confining such quotations as much as possible to the even gauge. This is quite an important feature, and will commend itself to all manufacturers whether members of the association or not.

A second committee, composed of J. G. Battelle, G. E. Needham, H. P. Lloyd, Joseph Biechle and R. F. Graham, was instructed to formulate and suggest additional plans for improving present low prices and to deal with the unsatisfactory condition of the iron roofing business. Adjournment of morning session was then taken, to meet again at 2 p.m.

Afternoon session was called to order at 3 p.m. A number of suggestions and plans for improving the condition of the business and establishing better prices were passed upon, but no definite action was taken, the meeting adjourning with the election of the following officers for the ensuing year, who will also act as an Executive Committee:

President, J. C. Biechle of the Berger Mfg. Company, Canton, Ohio.

Vice president, Chas. H. Conner of Chas. H. Conner & Co., Louisville, Ky.

Secretary and treasurer, R. J. Hyndman of the Hyndman Iron Roofing Company, Cincinnati, Ohio.

At the close of the meeting an elaborate banquet was tendered to the visiting and local members of the association and press by the American Roof-

ing Company, Globe Iron Roofing & Corrugating Company and the Hyndman Steel Roofing Company, Major H. P. Lloyd acting as toastmaster.

Following is a list of members in attendance at the meeting:

Chas. H. Conner, Louisville, Ky.

Columbia Corrugating Company, Chicago.

Jas. A. Miller & Bro., Chicago.

Allen's Corrugating & Cornice Works, Chicago.

Acme Roofing Company, Canton, Ohio.

Chattanooga Iron & Steel Company, Chattanooga, Tenn.

Wheeling Corrugating Company, Wheeling, W. Va.

Fostoria Steel Roofing Company, Fostoria, Ohio.

Rhodes, Dickelman & Co., Forest, Ohio.

Berger Mfg. Company, Canton, Ohio.

J. H. Eller & Co., Canton, Ohio.

Kanneberg Roofing Company, Canton, Ohio.

Cincinnati Corrugating Company, Piqua, Ohio.

Acme Roofing Company, Canton, Ohio.

Garry Iron Roofing Company, Cleveland, Ohio.

E. E. Souther & Co., St. Louis, Mo. American Roofing Company, Cincinnati and St. Louis, Mo.

Canton Steel Roofing Company, Canton, Ohio.

Cambridge Roofing Company, Cambridge, Ohio.

Etna Standard Company, Bridgeport, Ohio.

Globe Iron Roofing Company, Cincinnati, Ohio.

Eave Trough and Conductor Pipe Manufacturers.

A representative gathering of the Galvanized Iron Conductor Pipe, Eave Trough and Elbow Manufacturers of the United States met in session at the Burnett House, Cincinnati, Ohio, Wednesday, January 9. The meeting was called to order by Chairman T. C. Snyder of Canton, Ohio, and the roster being read the following firms were shown to be in attendance or represented, viz:

W. Austin Obdyke & Co., Philadelphia, Pa.

Marlin & Co., Alleghany, Pa., by H. A. Marlin.

Thomas Lee, Cincinnati, Ohio.

Acme Roofing Company, Canton, Ohio.

Chattanooga Iron & Steel Company, Chattanooga, Tenn., by J. E. Annis.

Wheeling Cornice Company, Wheeling, W. Va., by E. C. Ewing, Alex Glass, W. L. Ewing.

Clark, Quien & Morse, Peoria, Ill.

Fostoria Steel Roofing Company, Fostoria, Ohio.

Canton Steel Roofing Company, Canton, Ohio, by T. C. Snyder, president.

Rhodes, Dickelman & Co., Forest, Ohio, by F. B. McMillin.

Berger Mfg. Company, Canton, Ohio, by E. Langenbach, secretary; J. Biechle, president.

J. H. Eller & Co., Canton, Ohio, by J. H. Eller, president.

Kanneberg Roofing Company, Canton, Ohio.

Cincinnati Cornice Company, Piqua, Ohio, by J. G. Battelle and James Hicks.

Acme Roofing Company, Canton, Ohio.

Bowers & Galpin, Binghamton, N. Y.

Columbia Corrugating Company, Chicago, Ill.

Jas. A. Miller & Co, Chicago, Ill.

David Lupton Sons, Cleveland, Ohio.

Allen's Corrugating & Cornice Works, Chicago, Ill.

Ferd. Dieckmann, Cincinnati, Ohio.

Miller Iron Company, Providence, R. I.

Scottdale Iron & Steel Company, Scottdale, Pa., by T. F. Graesser.

The object of the meeting was principally to discuss rules and regulations governing the production and sale of the material in question, such as standard measurements and uniform price-lists. At present the difference in sizes of pipe are not at all consistent with the existing list, this being also the case with eave trough. Under the present system in vogue manufacturers have learned that while a profit was assured in the sale of a certain size, based upon the existing list price, yet there proved to be a considerable loss when another size was in question. The matter of reduced freight classification is also another important feature that was deliberated upon, although much had already been accomplished in that direction through the personal efforts of T. C. Snyder, chairman, previous to the present meeting.

A principal feature discussed was the fact that the industry is thoroughly overdone, the manufacturer protesting that not one of them is making a single

dollar profit. No suggestions that could be immediately adopted were brought forth, and with the exception of making several changes in the present price-list nothing was done.

The election of officers resulted as follows:

President, C. D. Clark of Clark, Quien & Morse, Peoria, Ill.

Vice-president, E. L. Langenbach of Berger Mfg. Company, Canton, Ohio.

Secretary and treasurer, Alex. Glass of Wheeling Corrugating Company, Wheeling, W. Va.

One fact was emphasized very strongly, that having reference to the productive capacity of the manufacturers of the goods in question, it being stated that the total number of feet sold in 1894 amounted to between 7,000,000 and 10,000,000, while one concern alone was capable of producing 15,000,000 feet, there being several others possessing almost equal productive facilities. The title of the organization is the United States Eave Trough & Conductor Pipe Association.

Sheet Metal Class at the Pratt Institute.

The sheet metal pattern cutting class at the Pratt Institute Trade School, Brooklyn, has entered on its second quarter's work with most encouraging prospects. Instructor Louis Rouillon speaks in enthusiastic terms of the intelligent interest displayed by the pupils and the progress made by them since the class was started. In this second term the pupils are being taken into the practical sphere of sheet metal pattern cutting, including roofing and cornice work. Both Mr. Rouillon and Professor Richards express themselves as being eminently satisfied with the results so far attained by this new class. Naturally, at the start, it is more or less in the nature of an experiment, and the hard times have prevented a number of candidates who wished to enter the class from doing so. By the commencement of the next season, in September, however, it is expected that a much larger number of applicants for instruction will present themselves. Mr. Rouillon is now drawing out a detailed scheme of instruction, which he proposes to follow, and by which the pupils will be provided with as thorough an education, theoretical and practical, in sheet metal work as possible. The class is held on three evenings of the week, Monday, Wednesday and Friday, from 7.30 to 9.30; and the regularity of the pupils in their attendance is reported as very gratifying.

KURTZ & Co., 2427-29 Calumet avenue, Chicago, are to furnish the copper cornices, bay windows and skylights for the residence of George F. Harding, Thirty-eighth street and Elmwood place.

The Roofing Trade in the West.

The following extract from a letter with which we have been favored by a large roofing concern in the West presents a cheerful view of the outlook for the roofing trade in that section of the country: "Take it all in all, they write, the outlook for business in our line in Missouri, Kansas, Oklahoma and Indian Territories is decidedly brighter than at any time for the last three years, except, possibly, in the early part of 1893, when everything opened very auspiciously till interrupted by the great panic. But we think our expectations for 1895 have a better foundation than in the spring of '93, for the reason that plans for improvements at that time were rudely shattered by the panic, though not in many cases entirely abandoned, and many cherished plans have developed and accumulated since, awaiting only an opportune time for execution. This now seems to be at hand. We are receiving inquiries and a few scattering orders from old customers whom we have not heard from for even as long as four and five years; and in answer to inquiries as to why we have not heard from them before, the almost universal reply is that they have not needed anything in our line. This we take as one of the very best indications of a revival of business, and that, coupled with the very low ruling prices, we think will undoubtedly make business good."

FLASHINGS.

THE KNISELY & YELDHAM COMPANY, 68-74 West Monroe street, Chicago, are to furnish the copper work for the residence of Frank J. Wilson, Washington boulevard and Sacramento avenue.

KNORR & BLOCKS, 165 Wells street, Chicago, are to furnish the cornices, skylights and tin work for the building of Lystad & Anderson, 296-298 East Division street.

THE DAY CLASS in tin-smithing, roofing and cornice work, which was to open on January 2 at the New York Trade School, was not started owing to the insufficient number of applications. This is to be regretted, as a competent instructor had been secured and an elaborate course had been decided upon. After it was decided not to open this class, additional applications were received sufficient to warrant its beginning, but unfortunately too late to change the decision. Another attempt, however, will be made next year to start this class. The course of instruction was intended to qualify pupils to work both tin and sheet iron, and teach them all the little tricks of the trade which oftentimes are only secured after a long experience and without which a workman labors under a disadvantage. In addition to this, instructions would have been given in the laying out of work and cutting such irregular shapes in sheet metal as are daily found necessary in this trade.

EMIL SCHAEFER was given the contract for the erection of a three-story, 36 x 40-foot shop at 1321 North Fifth street, Philadelphia, which will be used for the manufacture of sheet metal goods.

JOSEPH JAMES, miner of actinolite, Bridgewater, Ontario, advises that the demand for that material for roofing purposes during the year 1894 showed a very marked increase. He reports having disposed last year of 15,000 bags of

100 pounds each. The principal markets to which he caters are Chicago and Montreal, Canada. He also finds a good trade in Detroit, Mich.; Toronto and Hamilton, Canada, and even as far south as Nashville, Tenn. New markets, he says, are constantly opening up for this material.

THE MONTROSS METAL SHINGLE COMPANY, Camden, N. J., report that their business during the past year was very satisfactory, and that their output showed an increase of about one-third on that of 1893. They are preparing to add new presses and other machinery to their plant with a view to still further increasing their capacity. Among the new goods they contemplate introducing very shortly is a new siding plate, which they believe will be much appreciated by the trade.

THE CARBON PAINT COMPANY of New York City have been incorporated to manufacture water proof and fire proof paints, and to take contracts for roofing. The capital is \$100,000, and directors, William Calhoun, Chas. B. Hearn and Thomas D. Prentiss of New York City.

J. J. COLVIN, 79 La Salle street, Chicago, is to furnish the galvanized iron work for the residence of John C. Thompson, North Robey street.

THE ROME MFG. COMPANY, Rome, N. Y., make a fine display of planished and nickel plated copper goods at their New York office at 92 Walker street. Their line of tea kettles begins with the tiny individual kettle and, including the "five o'clock tea," continues to the many styles and sizes for kitchen use. They also make a varied line of handsome tea and coffee pots. Wash boilers of planished copper in all sizes are another of their specialties.

THE STAR DINNER PAIL COMPANY, Allegheny, Pa., have filed a bill in equity in the United States Circuit Court against W. B. Bertles, Son & Co. of Wilkes-Barre, Pa., alleging infringement of a patent pail attachment known as an "ear." The case was argued and decision was reserved.

R. M. WILSON, Rome, N. Y., has many things to interest the plumber at his New York office, 92 Walker street. One is a nickel plated copper boiler that is made for ordinary pressure, or special, to stand high pressure. It is pointed out that the nickel plated boiler is more sightly in kitchens than a copper boiler when the discoloration begins and that the nickel will stand a long time. These boilers can be furnished in sizes up to 100 gallons. They also carry a stock of all sizes and weights of copper lined bathtubs and guarantee the weight of the copper to be as stamped on the tub. One of their specialties is a copper lined tub in hardwood finish, set on nickel plated feet and adapted for the use of outside waste and overflow. This tub is gaining popularity as a sanitary tub and because no carpentry work is required. A wide line of closet tanks and seats of fine grade are also carried, as well as nickel plated bath cocks and basin traps.

THE WISCONSIN STATE ASSOCIATION OF MASTER PLUMBERS held their annual meeting in Milwaukee this week, electing officers for 1895 and discussing improvements in the plumbing laws.

Ventilation.

BY GEO. D. HOFFMAN, CHICAGO.

What a wealth of meaning in the term "ventilation," and yet how few, even among the heating trade, appreciate its full significance. Perfect ventilation of our homes, offices and schools would mean health, happiness and long life. It would also insure such an increase of our vital forces that we would, inside of three generations, be noted among the nations of the earth as the most progressive and most contented. If any one doubts this statement, let him simply stop and think for a moment of the men who are foremost in the line of the world's action. Read the history of their lives, and you will invariably find that these men laid the foundation of their strength and vitality by spending a large portion of their early lives out of doors and amid surroundings that insure a bountiful supply of fresh air every day. A large number of our American statesmen began their lives on a farm and were of necessity compelled to labor long hours in the open air, and at night retired to rest in rooms which were full of cracks and crevasses through which the air flowed freely. Fresh air! What magic there is in thy touch! The sick made well, the poor and depressed in spirits again see life through rosy glasses after close relations with thee! And yet, while ventilation is only the insurance of a full supply of fresh air in our habitations, there is not only indifference to its introduction, but actual opposition; and this opposition does not always come from ignorant people in the general acceptance of the term, but from architects and other professional men who should know better. The old saying, "Where ignorance is bliss 'tis folly to be wise," is hardly applicable in this case, as ignorance here is so surely followed by evil results that the saying should be reversed and bliss should follow wisdom.

Pure Air and Foul Air.

I could cite any number of leading authorities, and read whole chapters showing the necessities of ventilation and the evil consequences that result from breathing of impure air, but a mere statement of the component elements of air will suffice for this article. If we divide air into 10,000 parts, its composition will be as follows: Oxygen, 2096; nitrogen, 7900; and carbonic acid, 4 parts. When the proportion of carbonic acid in a room is increased from the normal amount of four parts in 10,000 to between six and seven in 10,000, a faint, unpleasant odor is usually perceptible to one entering from the fresh air; if the proportion reaches ten parts the room is said to be close. According to some authorities a full grown man at rest will exhale through the pores of the skin and from his lungs nearly $\frac{1}{2}$ cubic foot of carbonic acid per hour. Taking a room containing 2500 cubic feet of air in its normal condition, we find that the air contains 1 cubic foot of carbonic acid. Now, let us suppose this room to be a sleeping room, not ventilated, occupied by two persons eight hours each night. If the windows and doors of the room were closed during the eight hours, the natural portion of carbonic acid would be increased to about 18 cubic feet (or one part to 200), and the occupants would arise in the morning with depressing headaches. A person coming into the

room from the outside would declare the air to be "foul," and a man does not need to be a crank on ventilation to reach the conclusion that such a situation would be anything but healthful. This condition could be obviated, to a certain extent, by raising the windows, but that practice is dangerous in its results, is a prolific source of colds and sickness, and as a means of ventilation totally unreliable, not to mention the morning's discomfort of arising in a cold room.

Function of Ventilation.

But what is ventilation? Ventilation is the process of replacing foul, impure air in a confined space, with pure fresh air. Please note the word "replacing." Some very high authorities define ventilation as the process of simply diluting the confined foul air with fresh air sufficient to maintain a certain standard of purity, but in the writer's opinion the word replacing more clearly defines the process in common practice among heating engineers. Especially is this true in winter, as the fresh air is generally heated to a higher temperature than the air in the building, and as the colder air is a denser, heavier body than the warm air, the result is a gradual displacement of the cold impure air by warm fresh air.

The question which naturally presents itself at this point is the quantity of fresh air necessary to insure anywhere near perfect ventilation. Authorities differ radically on this question, but the majority seem to favor 30 cubic feet per minute per person, or 1800 cubic feet per hour. With this data in mind it is very easy to determine the amount of fresh air necessary to furnish each hour by multiplying 1800 cubic feet by the greatest number of persons occupying the building at any one time. In making this computation it is also necessary to take into consideration the number of gas lights burning. A simple gas jet burning full head will vitiate about 1800 cubic feet per hour per cubic foot of gas burned. Ordinary gas burners are rated to consume from 3 to 4 cubic feet per hour, and if we take the maximum quantity we have each light requiring 7200 cubic feet of air per hour while burning. Some writers argue that as gas jets, generally speaking, are only in use for an average of six hours per day of 24 hours, that the quantity of air required for lights should be divided by 4, so as to distribute the volume of air required over the 24 hours. In the writer's opinion this is all wrong. An ordinary, good system of ventilation should supply the maximum amount of air required during given hours of the days. Suppose, for instance, we adopted the rule for distributing the gas vitiation over the 24 hours, then, so far as the gas jets are concerned, we would only have to provide for one quarter of 7200 cubic feet, or 1800 cubic feet per hour for each gas jet. Now, let us see how this would figure out. For example, take an ordinary ten room house, containing 20,000 cubic feet of air, occupied by six persons, burning six jets during six hours. Giving each person 1800 cubic feet per hour and each gas jet 7200 cubic feet per hour, we have a total consumption of 54,000 cubic feet per hour. If, now, we have only allowed 1800 cubic feet for each gas jet and 1800 cubic feet for each person per hour, we would only have a total of 21,600 cubic feet, or a shortage of 32,400 cubic feet. Allowing the air in the house to be perfectly pure when the gas was first lighted, by the end of the first hour we would still have a shortage of 12,400

cubic feet. In the above example the writer's opinion is that provision should be made for supplying 54,000 cubic feet of fresh air per hour.

Size of Vents.

Given the whole quantity of air necessary, the remaining question to be determined is the size of the outlet and inlet pipes. The velocity of the air movement in these pipes is, of course, the real key to the solution of the question. Where only natural forces are employed in moving the air, these velocities must vary according to the temperature of the air first, height of vent shaft second, and amount of frictional resistance third. The greater the difference between the temperature of air in the vent shaft and the outside the greater the velocity, the higher the shaft the greater the velocity, and the more direct the connection between the room to be ventilated and the main shaft the less the loss of velocity by friction. In ordinary work this loss of velocity by friction is considerable, and while it is a very simple problem to determine what the velocity of the air in the vent pipes would be if it were not for this question of friction, with friction in the calculation it becomes more or less a question of guess work. Most authorities, however, seem to agree that this loss will average between one-third and one-fourth of the total volume of air which would pass through a certain sized opening if the loss by friction were not considered. Or in other words, after determining the initial volume of air, deduct one-third or one-fourth of this amount, and the remainder will be the actual volume of air passed.

Velocity Due to Temperature.

In determining the initial velocity of the air in a given shaft we must know, 1, the difference in temperature between the air in the shaft and the outside temperature, and 2, the height of the shaft. In measuring the height of the shaft measure from the lowest vent opening to the top of the shaft. With these quantities known, the question resolves itself to a simple calculation of the difference of specific gravity between the column of heated air in the shaft and a column of cold air on the outside. Air expands, when heated, one-four hundred and eightieth of its volume for each degree of Fahrenheit that the temperature is raised from 32° to 212°. If the air in the shaft is 30° warmer than the outside air, the volume of air in the shaft would be increased 30 times one-four hundred and eightieth, or thirty four hundred and eightieths, or one-sixteenth. With a shaft 32 feet high the air would be expanded one sixteenth of 32 feet, or 2 feet; or, in other words, it would take a column of the heated air 34 feet high to balance a column of the external air 32 feet high. As it would be impossible to maintain this higher column of heated air so long as there was a free exit at the top of the shaft, the result would be a constant influx of air through the vent openings and a corresponding efflux from the top of the shaft.

The old saying that "water always seeks its level," is equally true of air. The colder, denser air will always displace the hotter, lighter air by reason of its greater weight or specific gravity. The velocity with which the outer air would rush into the shaft is determined by the velocity which a heavy body would acquire in falling through a space equal to the difference in the height of the two columns of air. In

the above example we have the external column 80 feet, and the column in the shaft 82 feet, or a difference of 2 feet. The velocity of air in the shaft, therefore, would be equal to the velocity a heavy body would acquire in falling 2 feet. A heavy body falling freely through space will fall 16.1 feet in one second, while in two seconds, by the principle of accelerating forces, it will fall 64.4 feet; thus falling during the second second the difference between 64.4 feet and 16.1 feet, or 48.3 feet. The pulling force of gravity alone is equal to the distance a body will fall in one second, which is 16.1 feet; deducting this from 48.3 feet we have 32.2 feet, the initial velocity during the second second. It is this initial velocity we wish to ascertain to determine the velocity of the air in the shaft in the above example.

Table of Velocities.

The rule for this calculation is as follows: Multiply the difference between the height of the heated column and the height of the external air by 64, and the square root of the product will be the initial velocity of the air. In the example above the difference between the height of the two columns is 2 feet. The example would resolve itself thus, $\sqrt{2 \times 64} = 11.31$, the initial velocity of the air in the above shaft in feet per second. Deducting the loss caused by friction, which is estimated at one-quarter, we have an actual velocity in round numbers of 8 feet per second, or 480 feet per minute, for each square foot of area in the shaft.

From the above we can easily deduce the following table:

Height of vent shaft in feet.	Excess temperature of air in shaft over external air.										
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	60°
10...	116	164	201	233	260	284	307	328	348	367	385
20...	164	232	285	330	369	404	434	465	492	518	545
30...	201	284	347	403	453	498	531	568	603	634	666
40...	233	329	403	465	518	570	614	656	696	734	769
50...	260	367	451	518	578	635	686	734	778	820	861
60...	284	402	492	568	632	686	731	774	815	855	895

In making the above table I have taken no account of the wind pressure, which, of course, in all calculations should have somewhat of a bearing. A high wind blowing over the top of a shaft will naturally accelerate the velocity, while a heavy cloudy day will have just the opposite effect.

These calculations are based on the movement of the air in the shaft, and independent of outside influences.

In determining the size of the fresh air inlets the question of leakage should be taken into consideration. While there is an evident effort on the part of all builders to make houses practically air-tight, it seems to be almost a physical impossibility to do so. In the opinion of the writer this leakage will vary all the way from 15 to 30 per cent. of the total volume of fresh air required. It is a very easy matter to determine which one of these percentages would be applicable to any given building by carefully examining the doors, windows and other outside openings, and the general construction of the building itself. Where the question of heating through indirect or hot air registers is taken into consideration, the inlet or hot air registers should be fully as large, if not larger, than the outlet registers. By having the inlet registers larger than the outlet we are thus able

to put an air pressure in the room heated and ventilated, and thus avoid any possibility of drafts.

NOTE.—Authorities consulted in making up the tables and calculations in this article are "Hood on Hot Water Heating," "Encyclopedia Britannica," and current articles in the various scientific magazines.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

GEORGE H. MARSH, Spencer, Mass., was awarded the contract for the steam fitting at W. A. Barr & Son's shop, which is expected to be ready for business about January 15.

PLUMBER J. H. ALVORD, Winsted, Conn., has the contract for heating the Gillette House on Case Park.

J. B. FARNSWORTH, Leominster, Mass., has been engaged to furnish the plumbing for the new dormitory and academy buildings in South Lancaster.

WE LEARN from the New Haven Record that Langdon & Daly, North Main street, Hartford, Conn., have the contracts to do the hot water heating, plumbing and gas fitting in the elegant new residence of Horace J. Wickham of Manchester, also the hot water heating, plumbing and gas fitting of C. A. Ensign's mansion, at Tariffville.

D. E. CROUCH has the contract for building a house on West Main street, Norwich, Conn., for Frank L. Lathrop. Tompkins & Murphy are doing the plumbing.

ROBERT BROWN, Norwich, Conn., is fitting up a new bathroom in W. N. Blackstone's residence on Washington street. He has also just finished a fine piece of plumbing in C. S. Johnson's house on Washington street.

ALBERT A. PECK and Daniel E. Crouch are erecting residences at Norwich, Conn., that will have a plumbing system and will be heated with Winchester boilers.

A NEW PAROCHIAL RESIDENCE will be erected for the Rev. F. Fox in Newtown, Conn. A copper lined water tank will be placed in the attic and a plumbing system will be put in. The house will be heated by hot water.

ARCHITECT JACKSON has awarded the contract for the heating and ventilating of the St. Bernard's Parochial School, at Rockville, Conn., to the Underhill Warming & Ventilating Company of Boston.

THE SOUTHERN HEATING COMPANY, Louisville, Ky., are installing new hot water systems in both the Y. M. C. A. and Y. M. H. A. gymnasiums, for making hot water for bath purposes.

THE JOHN DAVIS COMPANY, 69-79 Michigan street, Chicago, are to install a steam heating plant in the building of E. S. Pike, 79-81 Fifth avenue.

THE BAKER & SMITH COMPANY, 193-197 Van Buren street, Chicago, have the contract for steam heating in the new building at 194-196 same street.

CONLON & MONTGOMERY, 33 Dearborn street, Chicago, have contracts for steam heating in the large apartment building at Jackson and Lytle streets, and in the residence of Thomas Engel, Evergreen avenue.

THE SAMUEL I. POPE COMPANY, 237 Fifth avenue, Chicago, are to install a

heating and power plant in the building of Durand & Casper, West Lake and Union streets.

F. B. TRIPP of Cottage City, Mass., has received a contract for the warming and ventilation of the new eight-room school building at that place. The plans and specifications presented by Mr. Tripp were prepared by James A. Harding, formerly with the Boynton Furnace Company of New York.

MONTGOMERY & PATTISON, 258 West Eighteenth street, New York, have the contract for plumbing a double set of officers' quarters on Governor's Island, the plumbing in the Ninth Regiment Armory, and some apartment houses on 165th and 71st streets.

AT A RECENT TOWN MEETING in Millis, Mass., the town voted \$5000 for a heating apparatus in the Adams School Building.

THE COMMITTEE ON BUILDINGS of the city of Jackson, Mich., will advertise for bids for the extension of the steam heating system throughout the county buildings. The expense is limited to \$1200.

THE CHARLES H. SIMMONS COMPANY, 72-74 Market street, Chicago, have the contract for steam heating in the residence of Mrs. L. B. Vincent, Grand boulevard and Forty-first street.

T. C. BRYD, 38 Dearborn street, Chicago, reports the following contracts for plumbing, gas fitting and sewerage: Morgan Flat Building, Dearborn street and Archer avenue, Thomas Hawkes architect; residence of D. W. Potter, 46 Drexel boulevard, F. W. Perkins architect; building of Durand & Casper, 163-167 West Lake street, S. W. Randolph architect; also remodeling the plumbing in the old and completing the plumbing in the new factory of Norton Bros., Maywood, Ill., F. R. Schock architect.

JONES & JAEGER, 80 Greenwich avenue, New York, are using an Electric steam boiler in heating a large saloon and restaurant in Jersey City, N. J.

CHAS. W. GRAVES, 62 North Clark street, Chicago, is to install a Florida steam boiler in the residence of J. Roebert, Humboldt boulevard and Western avenue.

E. BAGGOT, 169-171 Adams street, Chicago, has the contract for the plumbing, gas fitting and sewerage in the apartment building of John R. Hoxie, Michigan avenue and Forty-fifth street.

METZ BROTHERS, 107 Twenty-second street, Chicago, have the contract for combination heating in the residence of Dr. V. A. Pierce, Sixtieth street and Princeton avenue.

PURVES & BROCKWAY, 315 Fifth avenue, Chicago, are to install a steam heating plant in the residence of C. M. Bickford, Rogers Park, Ill.

JACOB G. WEBER, 244 North Clark street, Chicago, has the contract for the plumbing, gas fitting and sewerage in the flat building of Frank Rose, Oakdale avenue.

ALBERT A. CRYER & Co., 85 Centre street, New York, are installing two Richmond sectional boilers with 1600 feet of direct and 1500 feet of indirect radiation in the residence of J. A. Minott, at Orange, N. J., and intend to make this a model heating plant.

THE SCHOOL BOARD of Pittston, Pa., have awarded the contract for heating the Butler Hill School to John Scrimgeour for \$900, and for heating High School No. 3 to German & English for \$967.

THE RETAIL STORE.

Round Loaf Baking Pan.

The accompanying cuts represent a round loaf baking pan, offered by Silver & Co., 304-310 Hewes street, Brooklyn, and 20 Warren street, New York. The pan is covered, and is de-



Fig. 1.—Round Loaf Baking Pan.

signed to bake two round loaves of bread, 12 inches long and 4½ inches in diameter. It is stated that by the use of the pan bread will be baked evenly all through, that it will have a brown crust formed all over the surface, and that the bread will not crumble or break apart. The point is made that the bread, besides being pleasing in appearance, is baked right for making sandwiches, egg toast, Italian fritters,



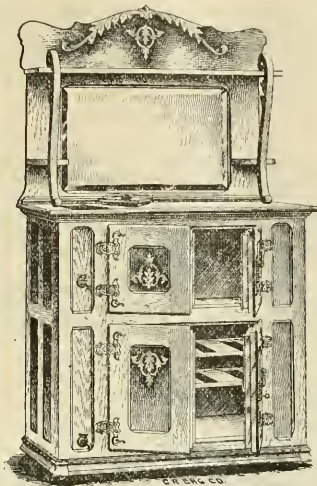
Fig. 2.—Round Loaf Baking Pan Open.

&c. The pan is made in Tin, X quality and Luster steel quality, in one size.

Dining Room Refrigerator.

An illustration is presented herewith of a refrigerator of new design, intended specially for dining room use, which has been brought out by the Grand Rapids Refrigerator Company of Grand Rapids, Mich. This refrigerator is elegantly carved and has a porcelain lined water cooler for drinking water, which opens on the top of the sideboard. As it has no connection with the interior of the refrigerator, the drinking water cannot be tainted by the smell of the food, but is always pure and cold. Another porcelain lined tank is placed in the provision chamber to receive the meltings from the ice. This avoids the using of a waste pan and furnishes soft

water at any time through the faucet. The refrigerator is further supplied with all the special features which have made the Leonard cleanable refrigerators so popular. It is made in solid



Dining Room Refrigerator.

oak, highly polished, in three sizes, namely, No. 32½, 33½ and 34½. The last named size is 44 inches wide, 22½ inches deep and 76½ inches high.

Eclipse Can Opener and Cover.

Brooklyn Novelty Company, 1055 Madison street, Brooklyn, are placing on the market the Eclipse can opener and cover, for removing the tops of condensed milk cans, as here shown.



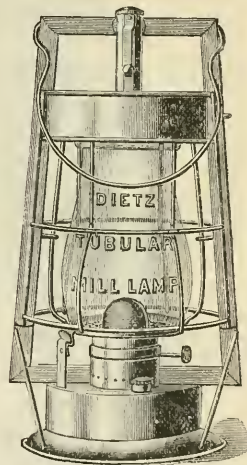
Eclipse Can Opener and Cover.

It is then utilized as a cover until the contents have been used. The device is struck up from sheet brass and then nickled. On the inside of the dome is

securely riveted a tool steel cutter, which is forced through the thin top of the can. The opener is then revolved until the top is cut out, the four projections in the run giving sufficient purchase or hold to do this. John T. Ryan, 96 Chambers street, New York, is the selling agent in this city.

Dietz Tubular Mill Lantern.

The accompanying illustration represents a tubular mill lantern being introduced by R. E. Dietz Company, 60 Laight street, New York. The burner is locked in place by two positive locks on the globe frame, which work automatically. In addition to this a padlock may be used to lock the globe frame to the guard frame, thus preventing the watchman lifting the globe to light his pipe, or for other purposes. The guard has the company's wind break to prevent access to the flame over the top of the globe. The guard, it is stated, is extra strong, well made, and that it is locked in position by an automatic spring. It is explained that the base of the lantern is given extra



Dietz Tubular Mill Lantern.

strength, and that it is locked permanently to the frame by the use of side braces, holding them firmly together, independent of solder, a feature, it is remarked, peculiar to these lanterns. The manufacturers claim that the lantern is substantially made in every respect; that the solid drawn retinned oil fount holds 1½ pints of oil; that the lantern will burn 19 hours without refilling; that the combustion is perfect; that it burns with a clear white flame, giving a brilliant light, and that the oil never heats.

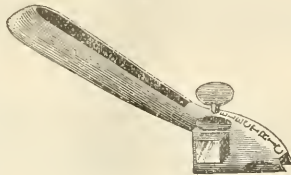
THE FIRM OF Buell & Farr, Earlville, N. Y., was dissolved by mutual consent December 10. After that date F. C.

Buell took the hardware department and L. W. Farr the shop at the same place.

[Davidson's Electric Cider Press.

O. E. Davidson & Co., Nashville, Tenn., are introducing a cider press, as here shown. The cutter is made of tinned steel, which, it is stated, will not wear except from rust, and will not rust if cleaned and kept in a dry place, while the board and crate are of well seasoned hardwood. The castings are of gray iron covered with water proof varnish to prevent rust, and the other metal parts are of wrought iron. It is explained that the press cuts and peels the apples, separating the good from the bad; a feature, it is remarked, that is not essential in making cider, but in preparing fruit for cooking purposes is very convenient. It is further explained that the danger of the cider becoming blackened by metal rollers and hoppers is obviated by the construction of the cutter, which carries off the cut apple before it touches any part of the hopper or other metal from which it might be stained. It is pointed out that as the press is small and convenient to carry, it is not likely to be left in the orchard to rust or to rot, as may be the case with larger presses. The manufacturers state that the press is small, light, strong and

be sharpened in five minutes by any child old enough to skate. In use the side of the sharpener forms a right angle with the file, to make it impossible to file anything but a true plane on



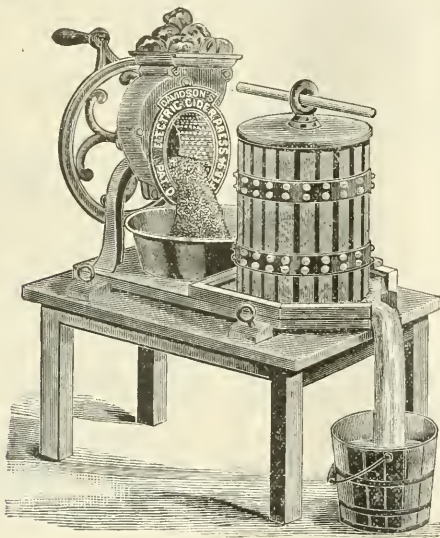
B. & W. Skate Sharpener.

the skate, or to round the edges. The point is made that as the file wears it can be moved its full length on four sides, thus giving a large amount of filing surface.

MEMORANDA.

GEORGE B. BLIZARD, 108-110 Marion street, Philadelphia, distributes a very pretty calendar to his friends and customers. The illustration is a domestic scene from bird life, printed in colors. Mr. Blizard repairs and installs heaters and ranges, besides doing tin and sheet metal work of all kinds.

"THE JEWETT REFRIGERATORS, CLASS 'A A' SPECIAL," is the title of a very handsome publication for which we are



Davidson's Electric Cider Press.

low in price, and that while not designed to make cider for wholesale or in large quantities, it will be found sufficiently large for family use and well adapted to that purpose.

B. & W. Skate Sharpener.

George M. Mattoon, 111 Duane street, New York, as sole selling agent for Banker & White, is introducing the skate sharpener herewith shown. The sharpener is $\frac{1}{2}$ inches long, made of malleable iron, full nickel plated, with a square file held in place by a thumb screw. It is explained that the principle upon which the sharpener works is that of draw filing, and that by its use the duller pair of skates can

be sharpened in five minutes by any child old enough to skate. In use the side of the sharpener forms a right angle with the file, to make it impossible to file anything but a true plane on the skate, or to round the edges. The point is made that as the file wears it can be moved its full length on four sides, thus giving a large amount of filing surface.

inherited to the John C. Jewett Mfg. Company, Buffalo, N. Y. It is a pamphlet $10\frac{1}{2} \times 8$ inches, containing 55 pages and bound in a rough paper with the title in raised red letters. In the beginning is a brief account of the Jewett refrigerators, telling of their different styles and of their merits. Then follow 50 pages containing cuts of a great variety of styles of the Jewett "A A" refrigerators. The cuts are made from artistic sketches and each refrigerator is illustrated with a perspective view, plan and a cross section and often other views, such as transverse sections and different elevations. For the regular stock refrigerators Class A, the trade are referred to the company's annual illustrated catalogue or

small refrigerator book. This second publication shows the latter style in various forms, the class of illustrations there likewise being artistic drawings, and in connection with the engravings are given price lists and dimensions and particulars of each refrigerator.

STOVER MFG. Company, Freeport, Ill., are offering a cover lifter which is referred to as being made of the best quality of gray iron and Bessemer steel, with a spiral coil handle to render the lifter always cool. The manufacturers claim for it every advantage of the more expensive lifters, and also special advantages in its construction which enable them to sell at much lower prices than other lifters of the same class. They are finished in copper and nickel plate, and are packed one dozen in a pasteboard box, and one gross in a case.

THE WAGNER MFG. COMPANY of Sidney, Ohio, makers of the Wagner cast iron hollow ware and cast aluminum ware, are distributing to their friends a very neat calendar for the year 1895. The central feature of the design represents a healthy looking small boy who has lost a shoe and is fast losing his socks, standing upon an overturned wash pan and holding in his extended left hand a Wagner kettle, while a yellow cat occupies a conspicuous place in the background. The leaves forming the calendar proper are attached to the lower right hand corner of the card. In addition to the figures for the days of the week and month there is also a yearly calendar and an indication of the various phases of the moon. Advertising matter extends across the top of the card, while in the left hand corner is a *fac-simile* of the company's trade mark.

THE GEUDER & PAESCHKE MFG. COMPANY, manufacturers of tinware, &c., Milwaukee, Wis., report that they are making preparations for a vigorous campaign in 1895. The tariff agitation having been practically settled for the next few years at least, they believe that business men generally will be justified in expecting a conservative increase on sales, and that in consequence there will be much heavier demands made on manufacturers than have been experienced for some time. The Geuder & Paeschke Mfg. Company, who are in position to give prompt attention to all orders entrusted to them, extend a cordial invitation to the trade at large to avail themselves of their facilities whenever in need of goods in their line.

H. W. GAZLAY, 138 Groton avenue, Cortland, N. Y., distributes circulars illustrating and briefly describing the Model milk cooler and aerator of his manufacture. The rapidity with which the device will cool milk and aerate it are alluded to in the account, as well as the advantageous features of the apparatus. The Model cooler is made of 1XX tin plate, with galvanized iron bottom. The circular presents letters from many sources testifying to the merits of the cooler.

A CALENDAR for the new year, for which we are indebted to D. H. Cassel, Esq. Bucyrus street, Crestline, Ohio, is one of the serviceable sort that will be appreciated by the trade. It is mounted on a green back, and the sheets of the calendar are large enough to present the days in big type that can be plainly read at a distance. The moon's phases are a feature of the calendar. Mr. Cassel is a dealer in hardware and stoves and a manufacturer of copper, tin and sheet iron ware.

STOVE TRADE NOTES.

Ohio and Indiana Stove Trade.

A few manufacturers throughout Ohio and Indiana are still in the throes of stock-taking, but most of them have completed, or nearly so, their balance sheets, showing the result of the year's business. Returns from Indiana are uniformly encouraging, and reports throughout Ohio, while varying in some respects, may be taken as a fair indication that there has been decided improvement throughout the year, although some foundries find they have fallen below the standard of '92, and in some instances even below the record of '93. When it is remembered that most of the conditions having an influence upon the market were discouraging to the utmost during the first half of the year, it is not surprising that the past six months have not wholly made up the deficiency to the majority; yet in not a few instances has this been the case, so that, taken all in all, the outlook is one of confidence, although it is yet too early, nor is it the season, for reports of increased sales.

One prominent manufacturer, summing up the situation from his own experience and from information gathered from others, reports that there has been an average shrinkage of sales of about 20 per cent. compared with 1893. Profits have suffered, from his standpoint, first from reduced sales and increased cost of manufacture due to decreased production, and second because of the higher cost of production arising from the improved and higher standard necessary to maintain by the general demand and through active competition, to cover which there has not been a corresponding increase in the selling price. But while prices have not advanced, they have remained steady. It would seem that the lower prices prevailing for raw material may have contributed something toward this end, thus benefiting the foundries, and, in some instances, at least, a lower scale of wages has prevailed. Other dealers, however, report that balance sheets show them that sales were about 8 per cent. more during 1894 than in 1892, and 20 per cent. more than in 1893, and one manufacturer writes that their sales during 1894 were almost double those of 1893.

Many foundries which closed down for the holidays and stock-taking have resumed, some with full heats and full hand.

There is a fair run of small orders throughout, but no large contracts, and we do not hear that large stocks of any

kind were carried over, but this is due probably to the conservatism which characterized trade throughout the entire year.

The prospects for '95 seem to be regarded as good, and manufacturers urge that a spirit of conciliation be exercised by all to the end that rate cutting may not disturb the outlook.

James S. Bailey.

James S. Bailey, president of the Tuttle & Bailey Mfg. Company, New York, Chicago and Boston, died on Sunday, January 6, at his home, 176 Harrison street, Brooklyn, of cerebral thrombosis, after an illness of about six weeks. He was born at Lebanon, Conn., December 9, 1817, and was descended from an English family who settled in Newburyport, Mass., in 1638. Mr. Bailey went in 1836 to New Haven, where he was engaged in business for a number of years. In 1847 he came to New York City, and in the following year went into partnership with C. F. Tuttle in the manufacture of registers, ventilators, &c. In 1866 the concern was incorporated as the Tuttle & Bailey Mfg. Company, well known as one of the leading houses in their line in this country. Mr. Bailey was president of the company from the time of their formation. He was a man of marked business capacity and very high character, and was noted among his associates for wisdom in council and for his absolute integrity. In private life his amiability of disposition and sympathetic nature endeared him to a wide circle of personal friends. He was warmly in sympathy with every movement for the amelioration of humanity, and was interested in a number of philanthropic and religious undertakings, in connection with which his loss will be severely felt. He was a member of the Chamber of Commerce of New York City, was a trustee of the South Brooklyn Savings Institution and had been for a long period associated with the Central Congregational Church of Brooklyn, of the Board of Trustees of which he was for many years the president. Mr. Bailey was married in 1843 to Augusta C. Trowbridge, daughter of Capt. Roswell Trowbridge of New Haven, Conn. The celebration of their golden wedding, on July 25, 1893, was attended by a large gathering of their children and grandchildren. Six children were born to them, of whom five are still living, two sons being connected with the Tuttle & Bailey Mfg. Company. The funeral was held on Wednesday and attended by a large circle of personal friends and business associates. The interment took place at New Haven, Conn., the following day.

E. D. PURVES will continue to look after the interests of Southard, Robertson & Co., 257 Water street, New York, in Pennsylvania, Delaware, New Jersey and the South during 1895. Their line of stoves and ranges have become leaders with many dealers in the territory mentioned.

The Coldwater Oil Stove Company.

Important improvements are now being made at Coldwater, Mich., in the plant of the Coldwater Oil Stove Company. This company began business in a modest way not long since, under the very efficient management of B. S. Tibbits. The plant known locally as the Titus Foundry was utilized for manufacturing, but the business has grown so rapidly that larger facilities have for some time been urgently needed. It has therefore been decided to erect new buildings, which are to be specially adapted to the purpose, and will be placed in a more convenient locality. One of these buildings will be 60 x 200 and the other will be 60 x 66 feet. They will be pushed to completion as rapidly as possible, and will be equipped with the most improved machinery and latest appliances for manufacturing every part of the different kinds of stoves which the company will place on the market.

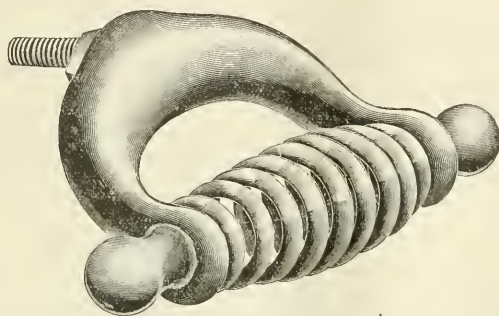
The company have thus far made and won their reputation on the All Right and Sunbeam oil heaters, which have found their way all over the United States. The success thus achieved has inspired Mr. Tibbits to extend the business so as to embrace other related lines. When the new plant is finished he will also make oil cooking stoves of several styles, somewhat on the plan of gasoline stoves, with two or three or more burners, but consuming oil instead of gasoline. He will further make a wood burning stove and range to meet the demand for an article of this character which will combine low cost with beauty, utility and economy of fuel. It is pleasant to note the evidence of prosperity which is thus presented.

HARTER & COSLEY, Troy, Ohio, who are agents for the Charter Oak stoves and ranges manufactured by the Excelsior Mfg. Company, St. Louis, are at present congratulating themselves on the outcome of a contest which was recently inaugurated by them. Early in December Harter & Cosley offered valuable prizes to the boys and girls of Troy who would enter a spelling contest. The words selected for the boys were "Harter & Cosley, Hardware," and the boy sending in the largest list of correctly spelled words composed of letters used in the above would receive a tricycle, while the sender of the second largest list would receive either a pair of skates or a sled. The girls' prizes consisted of a miniature Charter Oak stove as the first prize, and a pair of skates as the second prize, while the words selected for them to compose from were "Charter Oak Stoves." The contest created interest for weeks preceding Christmas, and on that day the prizes were delivered. On Christmas afternoon the store of Harter & Cosley was crowded clean out to the pavement. A band of music was present and the distribution of the prizes began. Miss Amy Allen secured the first girls' prize with 1350 words, while Miss Harriet Mitch was a close second with 1339 words. The boys' prizes were secured

by J. Morris Coombs with 3762 words, and Glen McConnell won the second prize with 3745 words. There were in all 206 competitors, and the enterprising merchants distributed to each and every one a bag containing oranges, candy and nuts, and a pearl handled pocket knife. While the labor incident to a contest of this kind is very considerable, yet the results obtained in this case were such that the labor expended was more than repaid. The Excelsior Mfg. Company are to be congratulated on having such wideawake and enterprising agents.

New Alaska Stove Door Handles.

The Troy Nickel Works of Troy, N. Y., have recently added to their already extensive assortment of Alaska goods a number of new designs of



New Alaska Stove Door Handles.—Fig. 1.—General View of a Plain Handle.

handles for this year's trade. We present in the accompanying illustrations two of the many styles which the company are offering, one being severely plain in its treatment, while the other represents a form more elaborate in construction. The handles are made of cast iron, with that portion that comes

in contact with the hand constructed of Bessemer steel wire, the whole being heavily nickel plated. The merit of Alaska goods is that they are always cool to the touch and the housewife or domestic runs no danger of burning her hands when opening a stove door fitted with one of these handles. The assortment which the Troy Nickel Works are offering the trade this year is a varied one and includes designs adapted to meet all reasonable requirements.

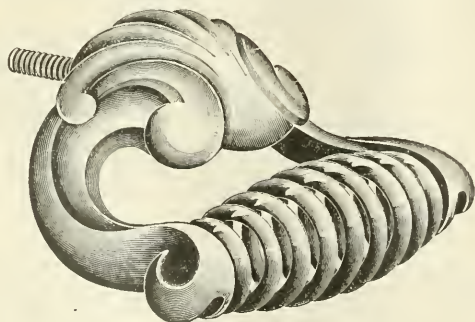


Fig. 2.—Handle of More Elaborate Design.

in contact with the hand constructed of Bessemer steel wire, the whole being heavily nickel plated. The merit of Alaska goods is that they are always cool to the touch and the housewife or domestic runs no danger of burning her hands when opening a stove door fitted with one of these handles. The assortment which the Troy Nickel Works are offering the trade this year is a varied one and includes designs adapted to meet all reasonable requirements.

ODD PLATES.

THE BLOOM ROTARY OVEN COMPANY have been incorporated at Burlington, Mo., by John Cook, A. Seiel and S. Black, with a capital stock of \$21,000.

HOLLY, MASON, MARKS & Co. of Spokane, Wash., have begun the manufacture of a sheet iron heater named the Queen. A local paper notes the remarkable fact that out of the first output of the factory an order was filled from New Bedford, Mass., and another from San Francisco, Cal.

THE MICHIGAN VAPOR STOVE COMPANY of Grand Rapids, Mich., are now settled in their new home. The work of removing from the old location required several weeks' time. The new building is located at 14 to 18 Mill street, with the rear on the bank of the Grand River. It is a brick four-story and basement structure, with dimen-

sions of 50 x 100 feet, and an addition in the rear 16 x 100 feet. A separate building for japanning, 36 x 46 feet, has been erected at a distance of 25 feet from the main building. The basement of the main building is used as a press room, containing four presses, the largest of which is capable of taking a 21

and floor is used as an assembling and mounting room, pattern and crating room and also has the testing room, which is 16 x 24 feet and is lined with sheet iron. The third and fourth floors are devoted to storage purposes, being used for storing stoves ready for the market. The company are now making 27 styles of stoves, including a full line of juniors, both high and low, and with single generators and individual burners. A notice of their line of stoves would not be complete without a reference to the jet cone burner, which is their distinctive specialty and is a feature of all the higher grade stoves. The company are not a corporation but a co partnership, of which F. A. Stone is manager and B. P. Kenyon superintendent. With a fine equipment and ample capital, this company will be an important factor in the vapor stove trade.

H. N. REYNOLDS, secretary and treasurer of the Craig Reynolds Foundry Company, Dayton, Ohio, was a recent visitor at the office of *The Metal Worker*, and is exceedingly enthusiastic over the outlook for the sale of the Triumph line of heaters and furnaces this company are producing the present year. Mr. Reynolds is an indefatigable worker and is largely responsible for the rapidity with which this company's productions have become so well and favorably known.

THE PERRY STOVE COMPANY, 242 Water street, New York, are already making preparations for the summer trade. They have secured the agency for the sale of the Aurora gasoline goods, and will soon bring out two new lines of gas hot plates. A. J. Kirkland has been engaged by the company to visit the trade in New York City and on Long Island.

DAVID MILLAR has made an engagement with the Fuller & Warren Company of Troy, N. Y., to represent them in New York and vicinity. He will have an office at 236 Water street, and will visit the trade in the interests of the F. & W. stoves, ranges, furnaces and steam and hot water goods.

THE CRAIG REYNOLDS Foundry Company, Dayton, Ohio, manufacturers of the Triumph line of furnaces and heating apparatus, are rapidly extending their line of agencies; among the more recent being that of the Pittsburgh Heating & Supply Company, 100 Wood street, Pittsburgh, Pa. This concern have been reorganized with ample capital, and will have exclusive control of sales within a territory covering 100 miles radius from Pittsburgh. The home company now have in active operation over a dozen first-class agencies for the sale of their productions, and are highly gratified with the reception their goods have met, as is evidenced by the numerous testimonials received daily. Six styles and 32 sizes, from the cheapest to the highest grade, warm air furnaces are now being marketed by them; in addition to which they are producing two styles and ten sizes of combination heaters. A handsome catalogue full of valuable and practical information is now on the press, which will be ready for distribution February 1, 1895.

THE CHEAP FUEL PROBLEM for the fuelless prairies of the Northwest, says a Western paper, was settled by the Maker of the earth before humanity raised the question of a problem. There is now hardly a portion of the settled prairie country of the Northwest that is not blessed with an outcropping vein of

x 39 inch stove top and then allowing 2 inches leeway. This machine was built by the E. W. Bliss Company and weighs 12 tons. This room also contains a planer built by the G. A. Gray Company of Cincinnati, 36 inches by 8 feet. The engine and boiler room are also in the basement. Power is supplied by a 90 horse-power engine and a 90 horse-power water wheel. On the first floor are the office and shipping room, tool room and machine room. The sec-

lignite coal, and where this fuel can be easily reached by rail or wagon road the farmers that were wont a few winters since to spend the cold season twisting marsh hay for fuel are now burning this lignite, and enjoying coal fires with less expense than many of the citizens of Eastern States. This winter farmers are hauling into Bismarck by wagon this coal, taken from exhaustless veins a few miles north of the city. They sell the coal in the city at \$2.50 per ton, which they buy at the mine for 90 cents. This coal is sold at most of the Dakota cities at from \$2 to \$3 per ton. Two and a half tons are worth 1 ton of the best anthracite, which would cost from \$8 to \$11 per ton.

THE REPUTATION of the goods manufactured by the Portsmouth Stove & Range Company of Portsmouth, Ohio, is not confined to this country alone, but has spread abroad among foreign nations. The company have lately received a letter from Thalmy, Switzerland, asking prices on their ranges delivered at Antwerp, and feel that after the goods are once introduced into that section of the world large sales will result.

DE HAVEN & COMPANY Limited, Pittsburgh, Pa., have brought out a new line of Cinderella Kitcheners which are reported as being an entirely new series of all cast iron ranges, and adapted for burning hard or soft coal or wood. The ranges are referred to as having embodied in their construction many new and desirable features. They are made with feet and skirting in lieu of the low closet, and they also have a full complement of high shelves and high closets. The reservoir is made of planished copper and holds 15 gallons of water.

THE LAURA NEVINS RANGE & HEATING COMPANY, Minneapolis, Minn., recently issued a very neat Christmas greeting in the shape of an oblong pamphlet dedicated to the "friends, admirers and patrons of the famous Laura Nevins ranges." The little pamphlet is presented with the compliments of J. H. Nevins and contains a history of the Laura Nevins ranges from their inception to the present time. A portion of the pamphlet is devoted to testimonial letters from some of those who have used the goods named.

A FEW DAYS AGO we received a cordial note from the Troy Nickel Works, Troy, N. Y., and after referring to the gratifying relations that have existed between us during the past year, they mention that they have taken the liberty of sending us a New Year's gift of a diamond pin. At least that is the way we read the letter, and we waited with not a little interest the coming of the present. A little package was duly received a day or two later, and was opened with no small degree of anticipation and curiosity. Exactly what this diamond pin was need not be told here. It was an article of considerable intrinsic value and was not a bit of paste or molded glass which we had expected to find. We cannot promise that every one will receive one of these gifts on application, but it would be worth while inquiring about them to merely satisfy one's curiosity.

F. V. KNAUSS of the Portsmouth Stove & Range Company, Portsmouth, Ohio, has been experimenting for some time past with a view to securing the complete combustion of fuel in a heating stove. The knowledge that no substance containing water can be heated

beyond the temperature of the water within it, has been utilized by Mr. Knauss in making the parts of a heating stove exposed to the direct action of the fire hollow and keeping them filled with water. The water is constantly changed through a system of circulation and the arrangement is such that by means of radiators a number of rooms may be heated. The experiments were made with an old Denmark retort stove taken from the scrap pile, and the results are said to have been very satisfactory. We understand that Mr. Knauss has patented his invention and will apply it to the construction of heating stoves.

THE CENTRAL OIL GAS STOVE COMPANY announce to their friends in the trade that a new catalogue for 1895 will be ready for distribution within a few weeks. The company have very carefully studied the requirements of the trade, and feel that the lines they will offer are complete in all respects. They will place on the market specialties in new goods which, by reason of their many attractive and desirable features, as well as the prices at which they will be offered, cannot fail to commend themselves to the attention of dealers generally. In addition to their popular Oilgas cook stoves containing improved burners for 1895, the company have something entirely new in the way of lamp stoves at special prices, and also sheet steel circular burner oil cook stoves.

H. WATERMAN, manager of the New York office, at 109 Beekman street, of the Cleveland Foundry Company, Cleveland, Ohio, has been in Philadelphia in the interest of their line of Puritan gas and oil heating and cooking stoves.

THE DIGHTON FURNACE COMPANY of North Dighton, Mass., are distributing with their compliments a very pretty calendar in the shape of a poster bound with metal strips, and provided with a metal eye for hanging it upon the wall. The design, which occupies the greater portion of the poster, consists of the picture of a beautiful child, the printing being in colors which harmonize much better than is usually the case with lithographs. Across the top of the poster is the name and address of the company, while at the bottom are 12 small leaves carrying a calendar for the months of the year. There is given in addition to the days of the week and month the various phases of the moon.

THE CALENDAR sent out by Roberts, Winner & Co., Quakertown, Pa., is an amusing card appropriate to the season. The decoration is an arctic scene with several polar bears skating about a field of ice. If the stoves, ranges and Alaska furnaces are suitable to the condition of the climate represented in the picture they are undoubtedly most efficient apparatus. The calendar proper is attached to sheets at one side of the card.

SINCE the Meyer Furnace Company of Peoria, Ill., purchased from the Weir Furnace Company of Des Moines, Iowa, the right to manufacture and sell the Weir soot and gas burning steel furnace in the State of Illinois, they have turned out 300 of these constructions in order to supply the demand from consumers in the State named. The Weir Furnace Company have lately completed arrangements with the Anshutz-Bradberry Company of Pittsburgh, Pa., whereby the latter concern will make the furnace and supply the trade in the States of Pennsyl-

vania, Ohio and West Virginia. The Anshutz-Bradberry Company have about completed the patterns for the manufacture, and, we understand, will engage in the production on a large scale. They will call the heater the Tremont gas and soot consuming furnace, for which a large sale is expected. They state that as a starter they will place seven of them in the Eleventh Ward school house in Pittsburgh.

WE ARE INDEBTED to the Scranton Stove Works of Scranton, Pa., for a copy of the 1895 calendar which they are distributing with their compliments to friends in the trade. The 12 leaves for the calendar proper are attached to the lower portion of a piece of heavy cardboard, in the upper left hand corner of which is a bird's-eye view of the Dockash Stove Foundry. Another picture represents three lads, two of whom have dinner pails in their hands, while the third is holding aloft his miner's cap. From the humorous expression of their faces and their general attitude it is evident that they are posing before the camera. The boys are on their way to the coal treaker and mine represented in the background of the picture, and which is located to the right of the stove foundry shown in the upper left hand corner of the card. At the left of the picture is the statement that the Dockash Foundry was in continuous operation during the year 1894, and that "dealers securing the sale of Dockash stoves and ranges always lead the market in their respective towns." The printing of the pictures is in black, while the text is in red.

THE MARCH BROWNBACK STOVE COMPANY of Poultown, Pa., issue an announcement relative to their heater department to the effect that in the Crown soft coal furnace the drum is self cleaning and all joints asbestos packed, the latter being water tight and therefore air tight. The construction is such that the products of combustion are made to come in contact with all parts of the radiator, thus giving a maximum radiation. The furnace has side draft, created by the fire pot being deeply ribbed on the inside. Attention is also invited to the Art Franklin grate, suitable for halls in dwellings, libraries, dining rooms, sitting rooms, bedrooms, &c. It is also arranged for heating rooms on the floor above. Circulars which the company have issued represent but a small portion of the many types of goods made, and the company suggest to dealers that if any part of them should not fully meet their requirements the company be advised in what respect the goods are wanting, so that they can forward circulars of other goods which will exactly meet their wishes.

JAMES DANIEL is one of the corps of salesmen who will advance the interests of the Acorn line of stoves and ranges for Rathbone, Sard & Co., Albany, N. Y., this year.

E. E. HORTON, one of the traveling salesmen of the Thatcher Furnace Company, 240 Water street, New York, has been making a few days' visit with the house previous to making one of his regular trips in the interest of the Thatcher furnaces and the Champion steam and hot water apparatus.

THE PECK-WILLIAMSON HEATING & VENTILATING COMPANY, with home office and factory at Cincinnati, Ohio, and branches in Chicago, Pittsburgh, Dayton and St. Louis, have been distributing to their friends in the trade

copies of what is known as Catalogue B. It is a volume of 80 pages, printed on good paper and neatly bound in heavy paper covers, embellished with embossed side title in old gold. The text is composed, for the most part, of testimonial letters from those who have used the company's goods. There are many illustrations, consisting of photo reproductions of buildings heated and ventilated by the company's system, the structures including public as well as private buildings, churches, &c. The latter part of the volume contains illustrations of the company's furnaces, together with descriptive particulars.

W. L. MERSFELDER, proprietor of the Cincinnati Pattern Works, Front and Lawrence streets, Cincinnati, Ohio, is distributing a very neat folder, neatly printed in colors and carrying on the front cover a handsome design embossed in old gold, bronze, red, white and green. In the upper left hand corner is the inscription, "Season 1895," and in the lower right hand corner, "A Short Tale Quickly Told." The inside pages of the folder are devoted to text relating to patterns made by the concern named. Attention is called to the artistic design of patterns which have been turned out for a number of years by means of a plant equipped with modern machinery and employing skilled labor. Reference is also made to the fact that they manufacture wood and iron patterns as well as follow boards, and furnish to order for approval designs and drawings. The folder is arranged with a silken cord with a pink tassel.

FLOYD, WELLS & Co. of Royersford, Pa., are the assignees of a patent granted last month to Isaac Brooke of Pottstown, Pa., for a hot air attachment for stoves. This attachment consists of a jacket which incloses the fire pot of the stove in such a way as to leave an air chamber between it and the fire pot. There is a depending portion of the jacket which, with the wall of the ash pit, forms an air supply nozzle. The lower portion of the jacket closes on the ash pit or base, while the upper portion is separated from the rim in such a way as to form a discharging passage. The arrangement of parts is such that air is directed to the exterior of the fire pot and then discharged from the air chamber in a highly heated condition.

THE DIRECTORS of the Central Stove Works of Lebanon, Pa., held a meeting last week for the purpose of arranging a programme for the new year. They decided, among other things, to increase the productive capacity of their plant in order to meet the rapidly growing demand for their goods.

THE TROY NICKEL WORKS of Troy, N. Y., are favoring their friends with neat little circulars calling attention to Alaska goods, which they are manufacturing in almost endless variety. Attention is specially directed to the Alaska tack hammer made of solid steel and full nickel plated, Alaska pickers, lifters, shovels and fire sets, and also to the Troy stove pipe damper.

THE PHILLIPS & CLARK STOVE COMPANY of Geneva and Troy, N. Y., are furnishing their friends in the trade with a calendar, diary and memorandum combined, it being of the same general style as that which they have issued for several years past. The card is in the shape of an easel for desk use, the lower portion carrying yearly calendars for 1895 and 1896. Over these calendars is fastened what is known as the "Daily Reminder," copyrighted by the Mat-

thews-Northrup Company, Buffalo, N. Y. This, as stated above, is a calendar, diary and memorandum combined, its special use being to remind one of things to be done each day and serve the place of an office diary. In using it all the leaves but the last on the left side should be folded back to the right, and one leaf turned over every two weeks thereafter. At the end of the year the "Daily Reminder" can be preserved as a record of the engagements of the year. A cord is so arranged in connection with the card as to hold the diary open at any page desired.

Russel Wheeler.

Russel Wheeler, one of the best known citizens of Utica, N. Y., died at his home in that city on January 5, after a brief illness. He was born at Rome, N. Y., August 7, 1820. He obtained an education in the district school, and at the age of 18 years entered John Mair's hardware store, remaining four years. In 1842 he became bookkeeper for Joel C. Bailey, who had purchased the Dexter Foundry in Utica. He was admitted as partner two years later, the firm being Bailey, Wheeler & Co. The concern increased the quantity and quality of their products and won a high reputation. The first coal cooking stove manufactured west of Albany, N. Y., was made in the firm's factory on Columbia street. During the 21 years of the firm's continuance they secured numerous patents for improvements in the construction of stoves and laid the foundation for a large and lucrative business. In 1855 Mr. Wheeler bought out the senior partner, and ten years later secured the interest of S. Alonzo Bailey. After 12 years he admitted to partnership his son, Frank E. Wheeler. Two years later a share of the business was secured by Francis Kernan, Jr. The partnership continued until January 1, 1890, when Mr. Wheeler and his son purchased Mr. Kernan's interest and made the firm Russel Wheeler & Son. Mr. Wheeler had been identified with numerous local interests. In 1849-50 he served as Alderman. He was a director of the Oneida National Bank and the Savings Bank of Utica. For many years he was vice-president of the Utica City National Bank. He was a director in the Utica Steam Cotton Mills and Willowale Bleaching Works, and had been a director of the old Utica & Black River Railroad Company. He had served Colgate University many years as a member of its Board of Trustees. He was an extensive traveler and had made frequent trips through the West, where he had large property interests, and also abroad. He was twice married, and leaves a widow and son.

H. R. Ives & Co., Montreal, Canada, have lately completed successfully a rather remarkable piece of foundry work. They have made 440 large sections of pipe, 10 feet in diameter and 5 feet long, weighing between three and four tons each. Out of this large number there were only 17 defective ones from any cause whatever. These rings or pipe sections were used for culverts underneath the new Soulanges Canal, allowing two rivers to run beneath the canal.

The recent severe cold in this section provided a large ice crop on the Hudson and other rivers.

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TRADE REPORT.

The Iron Market.

Pig Iron.—As regards to the New York market, makers of Standard Pennsylvania brands report a heavier movement, particularly in the lower grades. Some of the Pipe founders and puddling mills have contracted for considerable quantities. There is more inquiry for Foundry grades for delivery this year, and some transactions of this character have been closed. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Philadelphia advices indicate that Foundry Irons are steady at last week's prices, but very inactive. Local furnaces are well sold up, and as freights are too high to permit of other Irons being sent there at less than quoted rates, new business is comparatively unimportant. Deliveries on old contracts are being taken with satisfactory promptness, so that furnaces are not accumulating stock to any great extent, but the question of prices for later deliveries is still to be settled. Sales have been on a fairly liberal scale at about the old figures. General quotations for Philadelphia and equivalent points are about as follows:

Standard No. 1 Foundry X.....	\$12.50	@	\$13.00
Standard No. 2 Foundry X.....	11.50	@	11.75
Local No. 2 Plain.....	10.75	@	11.00
Local No. 1 Soft.....	11.50	@	11.75
No. 2 Soft.....	10.75	@	11.00

The trade in Local Coke Iron in the Chicago market shows no improvement over that reported last week. The demand is of moderate character, and inquiries have not increased. Sellers of Southern Coke Iron report a somewhat better inquiry in their line, but sales have been confined to small quantities. Lake Superior Charcoal is quiet. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00	@	\$14.00
Local Coke Foundry, No. 1.....	10.25	@	10.50
Local Coke Foundry, No. 2.....	9.75	@	10.00
Local Coke Foundry, No. 3.....	9.50	@	9.75
Local Scotch.....	10.50	@	11.00
Ohio Strong Softeners No. 1.....	12.50	@	13.00
Southern Silvery, No. 1.....	11.50	@	11.75
Southern Silvery, No. 2.....	11.25	@	11.50
Southern Coke, No. 2.....	10.00	@	10.50
Southern Coke, No. 3.....	9.75	@	10.25
Southern, No. 1 Soft.....	10.00	@	10.50
Southern, No. 2 Soft.....	9.75	@	10.25
Alabama Car Wheel.....	17.50	@	18.00
Jackson County Silvery.....	15.50	@	16.00
Other Ohio Silvery.....	14.25	@	14.50

The past week in the Pittsburgh Pig Iron market is reported as having been extremely quiet, sales being nearly altogether for small lots. In Foundry Irons little is doing and prices are weak and lower. For delivery during the next three months quotations are given as follows for cash:

No. 1 Foundry.....	\$10.50	@	\$10.65
No. 2 Foundry.....	10.00	@	10.25

Sales of Pig Iron are reported as having in creased rather than otherwise in the Cincinnati district, that is, the run of small orders has aggregated a larger tonnage, and one or two round lots

have also been sold, but prices have been so low that the profits have been below the average of ordinary times. Pipe works continue to be the largest melters of Pig Iron in the district. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75	@	\$10.00
Southern Coke, No. 2.....	9.00	@	9.25
Southern Coke, No. 3.....	8.50	@	8.75
Ohio Soft Stone Coal, No. 1.....	14.50	@	15.00
Ohio Soft Stone Coal, No. 2.....	14.00	@	14.50
Lake Superior Coke, No. 1.....	11.75	@	12.25
Lake Superior Coke, No. 2.....	10.75	@	11.50
Hanging Rock Charcoal, No. 1.....	19.00	@	19.50
Hanging Rock Charcoal, No. 2.....	15.50	@	16.00
Tennessee Charcoal, No. 1.....	13.00	@	13.50
Tennessee Charcoal, No. 2.....	12.00	@	12.50
Bessemer.....	11.65	@	12.00
standard Southern Car Wheel.....	16.75	@	16.75
Lake Superior Car Wheel and Malleable.....	14.25	@	14.75

A number of inquiries for Pig Iron are noted in the St. Louis market, which will, it is thought, lead to business later on. No. 2 Foundry is quoted at \$7, f.o.b cars Birmingham, and is being firmly held at this figure. It is intimated that considerable No. 2 Foundry Iron has been sold short, and that a determined effort will be made to force the price down. Whether this can be accomplished of course remains to be seen. Sales during the week have been confined largely to carload orders for immediate delivery. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.50	@	\$10.75
Southern Coke, No. 2 Foundry.....	9.75	@	10.00
Southern Coke, No. 3 Foundry.....	9.25	@	9.50

Metal Market.

Pig Tin.—In a speculative way there has been quite a large turnover the past week. Sales and resales publicly announced in the wholesale market represent a total of about 555 tons, and deals representing half as much more were put through quietly. The movement of prices was narrow, particularly so when the volume of trading is considered. Together with the fact that deliveries to jobbers and consumers have been heavy, and that stocks are still unusually large on both sides of the Atlantic, this leads to the impression that the market is being carefully nursed by a master hand at the business. Some authorities claim, however, that a large "short" interest exists and has more or less influence upon the market, particularly for early deliveries. Prices for small parcels from store are rather easier, Straits Pig being quoted at 15¢ @ 15½¢, Banca at 16¢ @ 16½¢, and Straits in bars at 16¢ @ 16½¢ per lb.

Copper.—The market for Ingot is without important change. In fact, about the only feature is that the offerings of outside lots of Lake at a fraction under the lowest figures of last week have increased somewhat. The large companies have, however, been filling ordinary orders at the old price, which they do not appear to be anxious to cut. Jobbing business has been only fair, consumers still pursuing a conservative line in their purchases. Prices for small lots are unchanged from last week's quotations.

Sheet Copper.—A moderate business is reported, varying in none of its aspects from the conditions noted in last week's report. Prices for small lots from store are firm on a net basis of 15¢ ½ lb.

Pig Lead.—Dealings have been on a somewhat larger scale, yet not up to what might reasonably be looked for, considering the narrow lines upon which buyers have operated for a month or six weeks past. Prices have remained stationary, American Pig in small lots being quoted at 3½¢ @ 3¾¢ ½ lb.

Solder.—Only a moderate demand is noted, with prices somewhat lower, owing to the decline in Pig Tin. Jobbers ask for ½ and ¾ guaranteed, 11¢, and for No. 1, 9¢ ½ lb.

Spelter.—No change has taken place here. Orders have been as few and as small as they were last month, and inquiries have afforded no indication of more position on the part of consumers to buy. The offering is not heavy, however, and prices remain quite steady. Good Western in small parcels from store rules at 4¢ @ 4½¢ per pound.

Tin Plate.—Some increase in sales of fair sized lots from store has taken place during the week, and the aggregate of small sales has been rather larger than that of last week, while a little more interest is manifested in forward shipments, owing probably to the prospective curtailment of production on the other side, from the closing down of works on account of the wage dispute. Yet the market lacks real animation, and the volume of business lags behind the average for this season of the year. Cannery and other large consumers still postpone making their forward contracts, and buyers in general are inclined to adhere to the conservative policy they have pursued for so long. The recent severe weather, too, has operated adversely on the demand in this section of the country. Prices are practically unchanged, but are inclined to weakness.

A London cable dispatch of January 9 to *The Iron Age* reports as follows in regard to the British Tin Plate market: Tin Plate market quiet, but values steady. Business confined chiefly to quick deliveries. Buyers lack confidence and prefer waiting developments. Wasters have been in better demand for Eastern account. The quotations, f.o.b. Swansea, are as follows:

Bessemer Cokes, IC 14 x 20.....	@	9/6
Siemens Cokes, IC 14 x 20.....	9/9	@ 10/
J. B. Steel Cokes, IC 14 x 20.....	18/6	@ 21/
Ternes, 20 x 28.....	10/6	@ 12/6
Charcoals, IC 14 x 20.....	10/6	@ 12/6

G. MOSER & SONS, Die makers and manufacturers of Tin Tags and Impression Plates, 225 West Second street, Cincinnati, Ohio, distribute to their friends in the trade a handsome calendar tastefully decorated in colors.

L. E. WAGAR & SON, West Sand Lake, N. Y., were dissolved by the retirement of the senior member of the firm. His interest has been purchased by his son, A. U. Wagar, who continues the business in stoves, ranges, tin, steel and slate roofing.

CONDITION OF THE

Hardware Trade.

IT IS EARLY as yet to look for improvement in business, as the trade have not much more than closed the accounts of the past year and are completing their preparations for the coming season, travelers beginning to go out, and merchants, after the annual inventory, are making out their orders for goods necessary to complete their assortments. As these in many cases were permitted to run down to an abnormally low point, an opportunity is afforded them of purchasing freely, but this they seem as yet indisposed to do. In the matter of prices the market continues without especial strength, and while there are comparatively few announced changes there are indications of weakness and slight concessions in the prices of a good many goods. Reference is, however, often made to prices as so low that they are not likely to decline further, and that the termination of the downward tendency must come sooner or later. Goods are certainly cheap enough, and the indications of improvement in certain lines are regarded with satisfaction by all concerned.

Advices from Chicago.—As intimated in a previous report, the salesmen connected with the Chicago Hardware houses made a very short stay during their home visit this year. With few exceptions they are all now on the road and are again hard at work. The orders for the first week of the year were very much better than that of last year, showing increased buying in almost every line in which business is done at this season. The outlook is extremely encouraging, as prospects are improving even in districts which suffered most from short crops or low price of farm products.

Notes on Prices.

Wire Nails.—The Wire Nail trade is in hardly as good condition as it has been for the past two or three weeks, there being some indication of increasing irregularity in prices. The manufacturers report a good deal of inquiry, but the volume of business is not exceptionally heavy. Small lots from store in New York are held at about \$1.15.

Advices from Chicago.—Manufacturers report a light inquiry. Distributors appear to be pretty well supplied with Nails to cover their requirements for some time into the future and are not disposed to add to their stocks at present. Small lots from stock stand at \$1.10 and for direct shipment from factory at \$1.05, with mixed carloads at \$1.

Cut Nails.—There is little business doing, but some inquiries are reported and the trade evidently are disposed to purchase only as Nails are needed. The tone of the market is unchanged and quotations are apparently slightly shaded when necessary, and especially when the assortment is attractive. Small lots from store are quoted at 90 to 95 cents.

Advices from Chicago.—No special feature has developed since last report. Manufacturers are receiving small orders only, which have aggregated only a moderate business. Prices are maintained at \$1 for small lots from stock.

Barb Wire.—The Barb Wire market continues to be characterized by a moderate demand, but the year opens with

many orders on manufacturers' books and an encouraging outlook as to the volume of trade in 1895. Notwithstanding this satisfactory condition, as far as the demand is concerned, the tone of the market is rather weak and slightly lower prices are obtainable than have recently prevailed.

Advices from Chicago.—Immediate business is light, but manufacturers now report that they are well supplied with orders for some time to come and are therefore not soliciting business so actively. Quotations are still \$2 for Galvanized and \$1.65 for Painted in small lots for direct shipment from factory and \$2.10 and \$1.75 for small lots shipped from stock.

Tinware.—The market for Tinware, pieced and stamped, is in a very unsatisfactory condition and prices are low and irregular. List prices are to a large extent dispensed with and sales made at net figures. Competition between the manufacturers is decidedly active, and altogether the situation is far from satisfactory. There have been some rumors in regard to an understanding between the manufacturers by which more regularity could be imparted to the market in this line, but nothing evidently has as yet been accomplished in this direction. Under date of January 2, Lalance & Grosjean Mfg. Company, New York, announce the following changes in list prices as given in their catalogue, January, 1894:

Cocoa Dippers.

Page 250.—Nos.....	51	151
Retinned.....	\$2.20	2.40

Dish Pans.

Page 206.—Qt.....	30
1XXX, doz.....	\$35.50
1XXXX, ".....	38.50

Plain or Pierced Milk Skimmers.

Page 241.....	30 and 35
Per gross.....	\$8

Bread Raisers.

Page 208.—Qts.....	10	14	17	21
Doz.....	\$28	34	40	46

Plain, Pie, Dinner and Scalloped Plates.

Page 194.—Inches.....	9
Gross.....	\$12

Retinned Stamped Tea Kettles.

Page 221.—Nos.....	14	16	18	20
Doz.....	\$12.60	13.80	15.60	16.80
Page 221.—Nos.....	22	24	26	28
Doz.....	\$21.60	24.60	29.40	31.20

Rimmed Jelly Molds.

Page 13.—Pts.....	1/2	3/4	1	1 1/2
Doz.....	\$3.65	7.30	8.75	10.30
Page 13.—Pts.....	2	3	4	
Doz.....	\$13.20	17.50	23	

Soup Ladles.

Page 245.—Nos. 29.....	30	220	230
Doz.....\$2.35	2.65	2.20	2.45

Retinned Laundry Dippers.

Page 247.—No.....	120
Doz.....	\$3.35

Retinned Cake Pans.

Page 226.—Add No.....	41 1/2
Per doz. list.....	\$3.15

Old Metals.—The market is quite dull, and prices are rather softer than they were at the close of the year. The following quotations represent the current rates paid by dealers in the city:

Heavy Copper.....	¢ 7
Light and Tinned Copper.....	¢ 6 1/2
Heavy Brass.....	¢ 4 1/2
Light Brass.....	¢ 3 1/2
Lead.....	¢ 2 1/2
Tea Lead.....	¢ 2 1/2
Zinc.....	¢ 2 1/2
No. 1 Pewter.....	¢ 10
No. 2 Pewter.....	¢ 5 1/2
Wrought Scrap Iron.....	gross \$7.50 @ \$8.00
Heavy Cast Scrap.....	gross 7.50 @ 8.50
Store Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

F. E. Myers & Bro.—The following is the price-list of Pumps manufactured by F. E. Myers & Bro., Ashland, Ohio. It will be observed that it is a relatively lower list compared with some used by other makers. It is subject to a discount of 55 per cent., f.o.b. Ashland:

No. 1, Fig. 328, 3-inch Shallow Well Pump.....	\$13.00
No. 8, Fig. 328, 3 1/2-inch Shallow Well Pump.....	15.00
No. 5, Fig. 307, 8-inch Deep Well Pump.....	15.00
No. 6 1/2, Fig. 307, 3 1/2-inch Deep Well Pump.....	17.00
No. 14, Fig. 521, 3-inch Deep or Shallow Well Pump.....	15.00
No. 32, Fig. 523, 3-inch Deep Well Pump.....	17.00
No. 56, Fig. 331, 3-inch Shallow Well Pump.....	14.00
No. 69, Fig. 332, 2 1/2-inch Shallow Well Pump.....	17.00
No. 70, Fig. 333, 2 1/2-inch Deep Well Pump.....	15.00
No. 73, Fig. 333, 3-inch Deep Well Pump.....	15.00
No. 73, Fig. 333, 3 1/2-inch Deep Well Pump.....	15.00
No. 102, Fig. 448, 3-inch Lift Pump.....	10.00
" 108, " 448, 3 1/2 " " " " " "	12.00
" 128, " 510, 3 " " " " " "	7.00
" 131, " 510, 3 1/2 " " " " " "	8.50
" 225, " 380, Windmill Pump.....	12.50
" 230, " 402, " " " " " "	13.50
" 235, " 403, " " " " " "	14.50
" 240, " 486, Regulator Pump.....	30.00
" 280, " 484, Imperial Cyclone Pump.....	18.00
No. 265, Fig. 573, Cyclone Tank Force Pump.....	7.00
No. 267, Fig. 483, Geyser Tank Force Pump.....	17.00
No. 268, Fig. 513, Low Down Tank Force Pump.....	16.00
No. 302, Fig. 477, Spray Pump complete.....	11.50
No. 320, Fig. 492, Bucket Spray Pump.....	5.50
" 330, " 547, Knapsack " " " "	10.00

Cordage.—The demand for Rope is sluggish and the volume of business small. In view of the dullness of the market prices are to a certain extent nominal and the tone of the market is rather weak. Quotations are as follows for large lots, f.o.b. factory or New York, the price given being subject to a discount of 1 1/2 per cent. for cash:

	Cents.
Manila, base.....	7
Sisal, base.....	4 1/2
New Zealand, base.....	4 1/2
Jute, base.....	4 1/2

Agate and Granite Ware.—Under date January 1 increased discounts on Agate and Granite Ware are announced by the Lalance & Grosjean Mfg. Company of New York and St. Louis Stamping Company of St. Louis, the new discount being made 40 and 10 per cent. The following changes in the list prices of some of these goods are also announced:

Changes in List Prices of Granite Ironware.

*Acme Improved Coffee Beggins.**With Granite Tops and Covers.*

Nos. 201 201 1/2 202 203 204 205	
Per doz. \$14.50 16.50 18.50 20.50 22.50 25.00	

With Patent Enamelled Wood Handles and Retinned Fluted Covers.

No. 100, per doz.....	\$9.75
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*Ham Boilers.**With Bail and Granite Drainer.*

No. 118, each.....	\$6.00
" 120, " " " " " "	7.00

Seamless Water Buckets.

No. 114, per doz.....	\$17.00
" 116, " " " " " "	20.00

*Seamless Water Buckets.**With Seamless Foot.*

No. 214, per doz.....	\$18.00
" 216, " " " " " "	21.00

<i>Wine Coolers.</i>	
No. 2, per doz.....	\$12.00
<i>Covered Spit Cups.</i>	
No. 150, per doz.....	\$6.00
<i>Improved Chafing Dishes.</i>	
With Nickel Plated Lamp and Stand.	
No. 103, per doz., complete.....	\$30.00
With Hot Water Pan and Nickel Plated Lamp and Stand.	
No. 203, per doz.....	\$36.00
<i>Oblong Soap Dishes.</i>	
No. 50, per doz.....	\$3.50
<i>Covered Oblong Soap Dishes.</i>	
No. 55, per doz.....	\$5.25
<i>Coffee Flasks.</i>	
No. 1, per doz.....	\$7.00
<i>Covered Seamless Royal Kettles.</i>	
With Retinned Covers.	
Nos..... 401 402 403 404 405	
Per doz.....\$1.50 6.75 7.75 8.25 8.25	
With Granite Covers.	
Nos..... 401 402 403 404 405	
Per doz.....\$6.00 6.75 7.75 8.75 9.75	
With Retinned Covers.	
Nos..... 406 407 408 409 410	
Per doz.....\$9.50 10.50 12.00 14.00 16.00	
With Granite Covers.	
Nos..... 406 407 408 409 410	
Per doz.....\$11.00 12.25 14.50 16.50 18.75	
<i>Patent Covered Windsor Kettles.</i>	
With Retinned Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$5.00 6.00 7.00 8.00 9.00	
With Granite Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$6.50 7.50 8.50 9.50 10.50	
With Retinned Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$10.00 11.00 12.50 14.00 16.00	
With Granite Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$11.50 12.50 14.50 16.50 19.00	
<i>Patent Stove Kettles.</i>	
With Retinned Covers.	
Nos..... 6 7 8	
Per doz.....\$9.00 11.00 13.00	
<i>Royal Tea Kettles.</i>	
Nos..... 60 70 80	
Per doz.....\$17.00 20.00 24.00	
<i>Tea Kettles.</i>	
Extra Deep Pit Bottom.	
Nos..... 16 18 20 22 24	
Per doz.....\$18.00 19.00 20.00 21.00 22.00	
<i>Chamber Pails.</i>	
Seamless.	
No. 3, per doz. (3 1/2 gallons).....	\$30.00
<i>Commode Attachment for Chamber Pails.</i>	
Nos. 10 and 20, per doz.....	\$12.00
<i>Bed Pans.</i>	
No. 1, each.....	\$4.00
<i>Oval Dish Pans.</i>	
Nos..... 15 18 22	
Per doz.....\$18.00 20.00 24.00	
<i>Dust Pans.</i>	
No. 10, per doz.....	\$7.00
<i>Lipped Saucepans.</i>	
With Rings.	
Nos..... 12 14 16 18 20	
Per doz.....\$4.50 5.50 6.00 7.00 9.00	
Nos..... 22 24 26 28	
Per doz.....\$10.50 12.00 14.00 16.00	
<i>Covered Seamless Royal Saucepans</i>	
With Retinned Covers.	
Nos..... 301 302 303 304 305	
Per doz.....\$4.50 5.25 6.25 7.25 8.25	
With Granite Covers.	
Nos..... 301 302 303 304 305	
Per doz.....\$6.00 6.75 7.75 8.75 9.75	
With Retinned Covers.	
Nos..... 306 307 308 309 310	
Per doz.....\$9.50 10.50 12.00 14.00 16.00	

<i>With Granite Covers.</i>	
Nos..... 306 307 308 309 310	
Per doz.....\$11.00 12.25 14.50 16.50 18.75	
<i>Patent Stove Saucepans.</i>	
With Retinned Covers.	
Nos..... 6 7 8	
Per doz.....\$9.00 11.00 13.00	
<i>Patent Covered Windsor Saucepans.</i>	
With Retinned Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$5.00 6.00 7.00 8.00 9.00	
With Granite Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$6.50 7.50 8.50 9.50 10.50	
With Retinned Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$10.00 11.00 12.50 14.00 16.00	
With Granite Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$11.50 12.50 14.50 16.50 19.00	
<i>Patent Covered Windsor Saucepans.</i>	
WITH RINGS.	
With Retinned Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$6.00 7.50 9.00 11.00 12.00	
With Granite Covers.	
Nos..... 12 14 16 18 20	
Per doz.....\$7.50 9.00 10.50 12.50 13.50	
With Retinned Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$13.00 15.00 17.00 19.00 21.00	
With Granite Covers.	
Nos..... 22 24 26 28 30	
Per doz.....\$14.50 16.50 19.00 21.50 24.00	
<i>Windsor Tea or Coffee Pots.</i>	
With Granite Covers.	
Nos..... 102 103	
Per doz.....\$11.00 13.00	
<i>Acme Tea Pots.</i>	
With Patent Enamelled Wood Handles and Retinned Fluted Covers.	
No. 1000, per doz.....	\$5.50
With Granite Covers.	
No. 1006, per doz.....	\$9.50
<i>Acme Coffee Pots.</i>	
With Patent Enamelled Wood Handles and Retinned Fluted Covers.	
No. 1005, per doz.....	\$8.50
With Granite Covers.	
No. 1005, per doz.....	\$9.50
<i>Royal Covered Seamless Sauce Pots.</i>	
With Retinned Covers.	
Nos..... 501 502 503 504 505	
Per doz.....\$4.50 5.25 6.25 7.25 8.25	
With Granite Covers.	
Nos..... 501 502 503 504 505	
Per doz.....\$6.00 6.75 7.75 8.75 9.75	
With Retinned Covers.	
Nos..... 506 507 508 509 510	
Per doz.....\$9.50 10.50 12.00 14.00 16.00	
With Granite Covers.	
Nos..... 506 507 508 509 510	
Per doz.....\$11.00 12.25 14.50 16.50 18.75	
<i>Patent Covered Windsor Sauce Pots.</i>	
With Retinned Covers.	
Nos..... 112 114 116 118 120	
Per doz.....\$5.00 6.00 7.00 8.00 9.00	
With Granite Covers.	
Nos..... 112 114 116 118 120	
Per doz.....\$6.50 7.50 8.50 9.50 10.50	
With Retinned Covers.	
Nos..... 122 124 126 128 130	
Per doz.....\$10.00 11.00 12.50 14.00 16.00	
<i>Patent Covered Windsor Sauce Pots.</i>	
With Granite Covers.	
Nos..... 122 124 126 128 130	
Per doz.....\$11.50 12.50 14.50 16.50 19.00	
<i>Confectioners' or Family Scoops.</i>	
Round Edge or Bottom.	
No. 20, per doz.....	\$5.00
Square Edge and Flat Bottom.	
No. 203, per doz.....	\$5.00
<i>Oyster Stands.</i>	
Per doz.....	\$21.00
<i>Oblong Bread Trays.</i>	
No. 1, per doz.....	\$6.00
<i>Round Trays.</i>	
Inches..... 10 12	
Per doz.....\$3.50 5.00	

<i>Granite Toilet Ware.</i>	
<i>Water Carriers.</i>	
No. 1, each.....	\$2.50
<i>Oval Foot Tubs.</i>	
Nos..... 1 2 3	
Per doz.....\$21.00 24.00 28.00	
No. 1 set, complete.....	6.25
<i>Windsor Water Carriers.</i>	
No. 20, each.....	\$3.50
<i>Windsor Stop Jars.</i>	
No. 20, each.....	\$3.50
<i>Windsor Foot Tubs.</i>	
Seamless.	
No. 20, each.....	\$3.00
Windsor Set, No. 20, complete.....	10.00
<i>Water Carriers.</i>	
No. 30, each.....	\$3.50
<i>Stop Jars.</i>	
No. 30, each.....	\$3.25
<i>Foot Tubs.</i>	
Seamless.	
No. 30, each.....	\$2.25
No. 30 set, complete.....	9.00
<i>Water Carriers.</i>	
No. 40, each.....	\$3.50
<i>Stop Jars.</i>	
With Bail.	
No. 40, each.....	\$3.50
<i>Foot Tubs.</i>	
Seamless, with Foot.	
No. 40, each.....	\$3.00
No. 40 set, complete.....	10.00
Changes in List Prices of Agate Iron Ware.	
<i>Windsor Tea or Coffee Pots.</i>	
Nos..... 102 103	
With Retinned Covers, per doz.....	\$10.00 12.00
With Agate Covers, per doz.....	11.00 13.00
<i>Acme Tea Pots.</i>	
No..... 1009	
With Retinned Covers, per doz.....	\$8.50
With Agate Covers, per doz.....	9.50
<i>Acme Coffee Pots.</i>	
No..... 1009 1/2	
With Retinned Covers, per doz.....	\$8.50
With Agate covers, per doz.....	9.50
<i>Improved Coffee Beggins.</i>	
Nos..... 200 200 1/2 201 201 1/2	
Per doz.....\$12.50 13.50 14.50 16.50	
Nos..... 202 203 204 205	
Per doz.....\$18.50 20.50 22.50 25.00	
<i>Coffee or Chocolate Pots.</i>	
Pints..... 4	
With Retinned Covers, per doz.....	\$16.00
With Agate Covers, per doz.....	17.00
<i>Pit Bottom Royal Tea Kettles.</i>	
No. 80 1/2, per doz.....	\$24.00
<i>Flat Bottom Royal Tea Kettles.</i>	
Nos..... 60 70 80	
Per doz.....\$17.00 20.00 24.00	
<i>Extra Deep Pit Bottom Tea Kettles.</i>	
Nos..... 16 18 20 22 24 26 1/2	
Per doz.....\$13.00 15.00 17.00 19.00 22.00 26.00	
<i>Oval Dish Pans.</i>	
Quarts..... 15 18 22	
Per doz.....\$18.00 20.00 24.00	
<i>Oval Foot Tubs.</i>	
Nos..... 1 2 3	
Per doz.....\$21.00 24.00 28.00	
<i>Infants' Seamless Baths.</i>	
No. 50, each.....	\$5.00
No. 100, each.....	9.00
<i>Covered Seamless Royal Cook Pots.</i>	
With Retinned Covers.	
Nos..... 401 402 403 404 405	
Per doz.....\$4.50 5.25 6.25 7.25 8.25	
With Agate Covers.	
Nos..... 401 402 403 404 405	
Per doz.....\$6.00 6.75 7.75 8.75 9.75	
With Retinned Covers.	
Nos..... 406 407 408 409 410	
Per doz.....\$9.50 10.50 12.00 14.00 16.00	
With Agate Covers.	
Nos..... 406 407 408 409 410	
Per doz.....\$11.00 12.25 14.50 16.50 18.75	

*Covered Seamless Royal Saucepans.**With Retinned Covers.*

Nos.	301	302	303	304	305
Per doz.	\$4.50	5.25	6.25	7.25	8.25

With Agate Covers.

Nos.	301	302	303	304	305
Per doz.	\$6.00	6.75	7.75	8.75	9.75

With Retinned Covers.

Nos.	306	307	308	309	310
Per doz.	\$9.50	10.50	12.00	14.00	16.00

With Agate Covers.

Nos.	306	307	308	309	310
Per doz.	\$11.00	12.25	14.50	16.50	18.75

*Covered Seamless Royal Sauce Pots.**With Retinned Covers.*

Nos.	501	502	503	504	505
Per doz.	\$4.50	5.25	6.25	7.25	8.25

With Agate Covers.

Nos.	501	502	503	504	505
Per doz.	\$6.00	6.75	7.75	8.75	9.75

With Retinned Covers.

Nos.	506	507	508	509	510
Per doz.	\$9.50	10.50	12.00	14.00	16.00

With Agate Covers.

Nos.	506	507	508	509	510
Per doz.	\$11.00	12.25	14.50	16.50	18.75

Strong Lipped Saucepans, with Rings.

Nos.	12	14	16	18	20
Per doz.	\$4.50	5.50	6.00	7.00	9.00

Nos.	22	24	26	28	
Per doz.	\$10.50	12.00	14.00	16.00	

Nos.	110	112	114	116	118
Per doz.	\$5.50	6.00	7.50	9.00	11.00

With Retinned Covers.

Nos.	110	112	114	116	118
Per doz.	\$7.25	7.50	9.00	10.50	12.50

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$13.00	15.00	17.00	19.00	21.00

Nos.	122	124	126	128	130
Per doz.	\$14.50	16.50	19.00	21.50	24.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$13.00	15.00	17.00	19.00	21.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$15.50	17.50	20.00	22.50	25.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$14.50	16.50	19.00	21.50	24.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$16.50	18.50	21.00	23.50	26.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$15.50	17.50	20.00	22.50	25.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$17.50	19.50	22.00	24.50	27.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$16.50	18.50	21.00	23.50	26.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$18.50	20.50	23.00	25.50	28.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$17.50	19.50	22.00	24.50	27.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$19.50	21.50	24.00	26.50	29.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$18.50	20.50	23.00	25.50	28.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$20.50	22.50	25.00	27.50	30.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$19.50	21.50	24.00	26.50	29.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$21.50	23.50	26.00	28.50	31.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$20.50	22.50	25.00	27.50	30.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$22.50	24.50	27.00	29.50	32.00

With Retinned Covers.

Nos.	122	124	126	128	130
Per doz.	\$21.50	23.50	26.00	28.50	31.00

With Agate Covers.

Nos.	122	124	126	128	130
Per doz.	\$23.50	25.50	28.00	30.50	33.00

Seamless Marking Pots.

No. 1, per doz.	\$10.00
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Seamless Straight Water Pots.

No.	114	116
Per doz.	\$17.00	20.00

Seamless Flaring Water Pots.

No.	214	216
Per doz.	\$18.00	21.00

Round Seamless Soup Tureens.

No.	320
With Agate Covers, per doz.	\$24.00

Seamless Oval Soup Tureens.

No.	200	300	400	500	600
Each.	\$7.50	8.50	9.50	10.50	11.50
No.	201	301	401	501	601
Each.	\$6.00	7.00	8.00	9.00	10.00

Ham Boilers.

No.	118	120
Each.	\$6.00	7.00

Wine Coolers.

No.	2
Per doz.	\$12.00

Confectioners' or Family Scoops.

No.	200
Per doz.	\$5.00

Confectioners' or Family Scoops.

No.	300
Per doz.	\$5.00

Royal Seamless Mugs.

No.	36
Per doz.	\$3.75

After Dinner Cups and Saucers.

No.	201
Per doz. sets.	\$3.50

Coffee Flasks.

No. 1, per doz.	\$7.00
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Ale Measures.

Quarts.	2	4
Per doz.	\$30.00	35.00

Dust Pans.

No. 10, per doz.	7.00
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Round Trays.

No.	310	312
Per doz.	\$3.50	5.00

Cigar Ash Receivers.

No. 5, Agate outside, White inside, per doz.	3.50
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Oblong Soap Dishes.

No. 50, per doz.	3.50
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Covered Oblong Soap Dishes.

No. 55, per doz.	5.25
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Patent Chafing Dishes.

No. 3½, per doz.	30.00
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Seamless Pots.

No. 1, with Agate Covers, per doz.	15.00
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Chafing Dish Outfit.

Per set.	5.50
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Seamless Slop Jars.

No. 309, per doz.	\$96.00
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Commode Attachment for Chamber Pails.

No. 10, per doz.	\$12.00
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Seamless Chamber Pails.

No. 3, with Agate Covers, per doz.	\$12.00
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Improved Slop Jars.

No.	200	210
Per doz.	\$30.00	33.00

Toilet Water Pitchers.

No.	701	702	703	704
Per doz.	\$8.00	10.00	12.50	15.00

Toilet Bowls.

No.	26	28	32	34
Per doz.	\$4.25	4.75	6.75	7.75

Complete Sets.

No.	7	8	9	10
Per doz.	\$12.25	14.75	19.25	22.75

Patent Horn Bed Pans.

No. 3, each.	\$6.00
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Bed Pans.

No. 1, each.	\$4.00
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Seamless Spit Cups.

No. 15, per doz.	\$6.00
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Berth Cups.

No. 25, per doz.	\$20.00
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Urinals.

No. 1, per doz.	\$27.00
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Urinals.

No. 2, per doz.	\$24.00
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Garbage Pails.

No. 412, each.	2.50
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Toilet Fountains.

No. 600, complete, each.	6.75
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Toilet Fountain Sets.

No. 650, complete, each.	9.00
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Douche.

No. 60, complete, each.	6.75
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Crescent Toilet Sets.

Nos.	301	302	303
Each.	\$2.00	1.75	2.50
No. 300, complete set.	6.25		

Brunswick Toilet Sets.

No.	1	2	3
Each.	\$3.50	3.00	3.50
Complete set.	\$10.00		

Cassel Toilet Sets.

Full set, consisting of 7 complete pcs.	\$12.00
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King Toilet Sets.

Nos.	101	102	103
Each.	\$3.25	2.25	3.50
Complete set.	\$9.00		

Prince Toilet Sets.

Nos.	201	202	203
Each.	\$3.50	3.00	3.50
Complete set.	\$10.00		

Odorless Commode Chamber Pails.

No. 30, each.	\$6.00
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Above changes in list prices also apply to Crystal Steel, Blue and White, Blue and Blue, and White Enameled Wares.

Washboards.—The following is the price-list of Washboards put on the market by the Saginaw Mfg. Company, Saginaw, W. S., Mich. It will be of interest as showing the line of these goods which they are putting on the market. Terms, f.o.b. cars Saginaw, 60 days, or 2 per cent. discount for cash in 10 days:

Solid Zinc.

Per dozen.	
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Crescent, family size, bent frame.....\$2.50

Red Star, family size, stationary protector.....2.50

Red Star, family size, reversible protector.....2.75

Red Star, laundry size, stationary protector.....3.75

Red Star, laundry size, reversible protector.....4.00

Electric, family size, stationary protector.....2.25

Saginaw Globe, laundry size, reversible protector.....	3.75
Wilson, family size, bent frame.....	2.25
Saginaw, family size, stationary protector.....	2.00
Saginaw, family size, reversible protector.....	2.25
Sunrise, family size, stationary protector.....	3.00
Sunrise, family size, reversible protector.....	2.25
Sunrise, laundry size, stationary protector.....	3.25
Sunrise, laundry size, reversible protector.....	3.50

Single Zinc Surface.

Naiad, protector, family size, open back, perforated.....	1.90
Naiad, protector, laundry size, open back, perforated.....	3.00
The Queen, protector, family size, open back.....	1.85
Crescent Globe, protector, family size, solid back.....	1.85
Crescent Globe, protector, family size, ventilated back.....	1.85
Diamond, protector, family size, solid back.....	1.85
Diamond, protector, family size, ventilated back.....	1.85
Diamond, protector, laundry size, solid back.....	3.00
Diamond, protector, laundry size, ventilated back.....	5.00
Saginaw Globe, protector, family size, solid back.....	1.75
Saginaw Globe, protector, family size, ventilated back.....	1.75
Saginaw Globe, protector, laundry size, solid back.....	2.75
Saginaw Globe, protector, laundry size, ventilated back.....	2.75
Wilson, bent frame, family size, solid back.....	1.75
Wilson, bent frame, family size, ventilated back.....	1.75
Saginaw, protector, family size, solid back.....	1.50
Saginaw, protector, family size, ventilated back.....	1.50
Morning Star, protector, family size, solid back.....	1.50
Morning Star, protector, family size, ventilated back.....	1.50
Eagle, protector, family size, solid back.....	1.50
Eagle, protector, family size, ventilated back.....	1.50
Langtry, pail size.....	1.10

Spring Balances.—The manufacturers of this line of goods are desirous of obtaining such business as is going and are making efforts to secure it by the quotation of relatively low prices. With the active competition which characterizes the market quotations are thus slightly lower.

Revised Price-list of Radiators.

The American Radiator Company send out from Chicago under date of January 1 new net price sheets of their extensive line of radiators. Their Regular List is as follows for steam and water, direct and indirect.

Direct Steam.

Per Square Foot of Heating Surface.

Height, Inches.....	45	38	32	31	26	25	23	22	20	19
Perfection:										
Connected with right and left threaded nipples.....	19½	20	22	24	26	28	28	28	28	28
Detroit, Ornamental Fluted:										
Connected with right and left threaded nipples.....	19½	20	22	24	26	28	28	28	28	28
National:										
Connected with right hand threaded nipples.....	19½	20	22	24	26	28	28	28	28	28
Ideal:										
Connected with right hand threaded nipples.....	19½	20	22	24	26	28	28	28	28	28
National, Single Column:										
Connected with right hand threaded nipples.....	22	25	27	29	29	29	29	29	29	29
Excelsior, with Cast Iron Top:										
Connected with right hand threaded nipples.....	20	22	24	26	28	28	28	28	28	28
Peerless:										
Connected with right hand threaded nipples.....	18½	19	21	23	25	27	27	27	27	27
Detroit, Plain Fluted:										
Connected with right and left threaded nipples.....	17½	18	20	22	24	26	26	26	26	26

Excelsior Indirect Radiators FOR STEAM.

Connected with right and left threaded nipples, 12 square feet per section, \$1.50 per section.

Perfection Pin Indirect FOR STEAM OR WATER.

Standard size, 10 square feet, \$1.50 per section.
Extra large, 15 square feet, \$2.00 per section.

Dinting Room Radiators.

Perfection, 50 per cent. off list.
Detroit, 50 per cent. off list.

Direct Water.

Per Square Foot of Heating Surface.

Height, Inches.....	45	38	32	31	26	25	23	22	20
Perfection:									
Connected with right and left threaded nipples.....	21½	22	24	26	26	26	26	26	30
Detroit, Ornamental Fluted:									
Connected with right and left threaded nipples.....	21½	22	24	26	26	26	26	26	30
National:									
Connected with slip nipples.....	10½	21	23	25	27	27	27	27	29
National Single Column:									
Connected with slip nipples.....	24	24	24	29	29	29	29	29	29
Peerless:									
Connected with right and left threaded nipples.....	21	21	21	21	21	21	21	21	21
Detroit, Plain Fluted:									
Connected with right and left threaded nipples.....	19½	20	22	24	24	24	24	24	28

Excelsior Indirect Radiators.

FOR WATER.

Connected with right or left threaded nipples, 12 square feet per section, \$1.65 per section.

Specialties.

STEAM.

Column.....	25 cents per section.
Curved.....	40 " "
Corner.....	\$1.50 per radiator.
Window.....	5 cents per section.
Stairway.....	10 " "
Direct-indirect.....	8 " "

WATER.

Column.....	40 cents per section.
Curved.....	40 " "
Corner.....	\$2.00 per radiator.
Window.....	10 cents per section.
Direct-indirect.....	8 " "
Perfection radiator tops.....	6 " "

Added to prices quoted for direct radiators.

In a circular accompanying the new lists they say:

"Severe competition among contractors frequently leads to the use of certain types of radiators, which, having a large amount of heating surface in each section, reduces the cost of manufacture; and while we firmly adhere to the principle that radiators, which, by the scientific formation of their loops, expose practically their en-

tire surface to the direct currents of cold air, are more efficient than those whose peculiar formation causes a for midable percentage of surface to depend on air partially heated by contact with the outer portion of loops, to perform the work of condensation, we have arranged the inclosed 'special list' to meet the necessities which severe competition occasionally imposes upon steam fitters, and to which we invite careful consideration. Our new three column radiator named Rococo, the

shipment of which we shall be able to commence in the very near future, will make our line of special radiators the largest and most comprehensive on the market; and we therefore trust you will give careful consideration to the special list we herewith inclose. In this connection we beg to state that the name of Perfection Flue has been changed to Monarch Flue, and, for the sake of brevity, Detroit Flue Renaissance to Italian Flue."

The special list here referred to is as follows:

Direct Steam

Per square foot of heating surface.

Height, inches.....	45	38	32	31	26	25	23	22	20	19
Italian Flue.....	16	16	16	16	16	16	16	16	16	16
Monarch Flue.....	15	17	19	21	21	21	21	21	21	21

Direct Water

Per square foot of heating surface.

Height, inches.....	45	38	32	31	26	25	23	22	20	19
Rococo.....	16	17	19	21	23	25	25	25	25	25
Italian Flue.....	17	19	21	23	25	25	25	25	25	25
National Four Column.....	16	18	20	22	24	24	24	24	24	24
Monarch Flue.....	16	18	20	22	24	24	24	24	24	24
Detroit Flue.....	16	18	20	22	24	24	24	24	24	24

Another list they publish refers to the Favorite radiators made by the M. Steele Company, Springfield, Ohio, of which the American Radiator Company handles the entire output.

DeHaven & Co., Limited, Pittsburgh, Pa., are directing the attention of the trade to a line of Cinderella Kitchens, which are referred to as being an entirely new series of all cast iron Ranges and adapted for burning hard or soft coal or wood. These Ranges are further referred to as having embodied in their construction many new and desirable features. They are also made with feet and skirting in lieu of the low closet, and they also have a full complement of high shelves and high closets. The reservoir is made of planished copper and holds 15 gallons of water. The trade are invited to send for descriptive catalogues of the Cinderella Stoves and Ranges.

Metal and Miscellaneous Prices.

CHICAGO, JANUARY 10, 1895.

Tin—
straits pigs 16¢

Imported Tin Plates—

Charcoal Plates—Bright.
Guaranteed Plates command special prices, according to quality.

	Per box.
IC, 10 x 14.....	\$5.75
IC, 12 x 12.....	5.75
IC, 10 x 14.....	5.75
IC, 12 x 12.....	5.75
IC, 20 x 28.....	11.50
IX, 10 x 14.....	7.50
IX, 12 x 12.....	7.50
IX, 14 x 20.....	7.50
IX, 16 x 20.....	7.50
IX, 18 x 20.....	7.50
IX, 20 x 28.....	11.50
IX, 22 x 28.....	11.50
IX, 24 x 28.....	11.50
IX, 26 x 28.....	11.50
IX, 28 x 28.....	11.50
IX, 30 x 28.....	11.50
IX, 32 x 28.....	11.50
IX, 34 x 28.....	11.50
IX, 36 x 28.....	11.50
IX, 38 x 28.....	11.50
IX, 40 x 28.....	11.50
IX, 42 x 28.....	11.50
IX, 44 x 28.....	11.50
IX, 46 x 28.....	11.50
IX, 48 x 28.....	11.50
IX, 50 x 28.....	11.50
IX, 52 x 28.....	11.50
IX, 54 x 28.....	11.50
IX, 56 x 28.....	11.50
IX, 58 x 28.....	11.50
IX, 60 x 28.....	11.50
IX, 62 x 28.....	11.50
IX, 64 x 28.....	11.50
IX, 66 x 28.....	11.50
IX, 68 x 28.....	11.50
IX, 70 x 28.....	11.50
IX, 72 x 28.....	11.50
IX, 74 x 28.....	11.50
IX, 76 x 28.....	11.50
IX, 78 x 28.....	11.50
IX, 80 x 28.....	11.50
IX, 82 x 28.....	11.50
IX, 84 x 28.....	11.50
IX, 86 x 28.....	11.50
IX, 88 x 28.....	11.50
IX, 90 x 28.....	11.50
IX, 92 x 28.....	11.50
IX, 94 x 28.....	11.50
IX, 96 x 28.....	11.50
IX, 98 x 28.....	11.50
IX, 100 x 28.....	11.50

Coke plates—Bright.

	Per box.
IC, 10 x 14.....	\$5.75
IC, 12 x 12.....	5.75
IC, 14 x 20.....	5.75
IC, 16 x 20.....	5.75
IC, 18 x 20.....	5.75
IC, 20 x 28.....	11.50
IC, 22 x 28.....	11.50
IC, 24 x 28.....	11.50
IC, 26 x 28.....	11.50
IC, 28 x 28.....	11.50
IC, 30 x 28.....	11.50
IC, 32 x 28.....	11.50
IC, 34 x 28.....	11.50
IC, 36 x 28.....	11.50
IC, 38 x 28.....	11.50
IC, 40 x 28.....	11.50
IC, 42 x 28.....	11.50
IC, 44 x 28.....	11.50
IC, 46 x 28.....	11.50
IC, 48 x 28.....	11.50
IC, 50 x 28.....	11.50
IC, 52 x 28.....	11.50
IC, 54 x 28.....	11.50
IC, 56 x 28.....	11.50
IC, 58 x 28.....	11.50
IC, 60 x 28.....	11.50
IC, 62 x 28.....	11.50
IC, 64 x 28.....	11.50
IC, 66 x 28.....	11.50
IC, 68 x 28.....	11.50
IC, 70 x 28.....	11.50
IC, 72 x 28.....	11.50
IC, 74 x 28.....	11.50
IC, 76 x 28.....	11.50
IC, 78 x 28.....	11.50
IC, 80 x 28.....	11.50
IC, 82 x 28.....	11.50
IC, 84 x 28.....	11.50
IC, 86 x 28.....	11.50
IC, 88 x 28.....	11.50
IC, 90 x 28.....	11.50
IC, 92 x 28.....	11.50
IC, 94 x 28.....	11.50
IC, 96 x 28.....	11.50
IC, 98 x 28.....	11.50
IC, 100 x 28.....	11.50

B.V. Grade, IC, 10x14, 14x20.....

Charcoal Plates—Tenne.

Guaranteed Plates command special prices, according to quality.

Worcester Brand and equal—

	Per box.
IC, 10 x 14.....	\$5.75
IC, 12 x 12.....	5.75
IC, 14 x 20.....	5.75
IC, 16 x 20.....	5.75
IC, 18 x 20.....	5.75
IC, 20 x 28.....	11.50
IC, 22 x 28.....	11.50
IC, 24 x 28.....	11.50
IC, 26 x 28.....	11.50
IC, 28 x 28.....	11.50
IC, 30 x 28.....	11.50
IC, 32 x 28.....	11.50
IC, 34 x 28.....	11.50
IC, 36 x 28.....	11.50
IC, 38 x 28.....	11.50
IC, 40 x 28.....	11.50
IC, 42 x 28.....	11.50
IC, 44 x 28.....	11.50
IC, 46 x 28.....	11.50
IC, 48 x 28.....	11.50
IC, 50 x 28.....	11.50
IC, 52 x 28.....	11.50
IC, 54 x 28.....	11.50
IC, 56 x 28.....	11.50
IC, 58 x 28.....	11.50
IC, 60 x 28.....	11.50
IC, 62 x 28.....	11.50
IC, 64 x 28.....	11.50
IC, 66 x 28.....	11.50
IC, 68 x 28.....	11.50
IC, 70 x 28.....	11.50
IC, 72 x 28.....	11.50
IC, 74 x 28.....	11.50
IC, 76 x 28.....	11.50
IC, 78 x 28.....	11.50
IC, 80 x 28.....	11.50
IC, 82 x 28.....	11.50
IC, 84 x 28.....	11.50
IC, 86 x 28.....	11.50
IC, 88 x 28.....	11.50
IC, 90 x 28.....	11.50
IC, 92 x 28.....	11.50
IC, 94 x 28.....	11.50
IC, 96 x 28.....	11.50
IC, 98 x 28.....	11.50
IC, 100 x 28.....	11.50

Tin Boiler Plates—

	Per box of 100 sheets.	Per box of 112 sheets.
IX, 14 x 28.....	\$11.75	12.25
IX, 16 x 28.....	13.25	13.75
IX, 18 x 28.....	14.75	15.25
IX, 20 x 28.....	16.25	16.75
IX, 22 x 28.....	17.75	18.25
IX, 24 x 28.....	19.25	19.75
IX, 26 x 28.....	20.75	21.25
IX, 28 x 28.....	22.25	22.75
IX, 30 x 28.....	23.75	24.25
IX, 32 x 28.....	25.25	25.75
IX, 34 x 28.....	26.75	27.25
IX, 36 x 28.....	28.25	28.75
IX, 38 x 28.....	29.75	30.25
IX, 40 x 28.....	31.25	31.75
IX, 42 x 28.....	32.75	33.25
IX, 44 x 28.....	34.25	34.75
IX, 46 x 28.....	35.75	36.25
IX, 48 x 28.....	37.25	37.75
IX, 50 x 28.....	38.75	39.25
IX, 52 x 28.....	40.25	40.75
IX, 54 x 28.....	41.75	42.25
IX, 56 x 28.....	43.25	43.75
IX, 58 x 28.....	44.75	45.25
IX, 60 x 28.....	46.25	46.75
IX, 62 x 28.....	47.75	48.25
IX, 64 x 28.....	49.25	49.75
IX, 66 x 28.....	50.75	51.25
IX, 68 x 28.....	52.25	52.75
IX, 70 x 28.....	53.75	54.25
IX, 72 x 28.....	55.25	55.75
IX, 74 x 28.....	56.75	57.25
IX, 76 x 28.....	58.25	58.75
IX, 78 x 28.....	59.75	60.25
IX, 80 x 28.....	61.25	61.75
IX, 82 x 28.....	62.75	63.25
IX, 84 x 28.....	64.25	64.75
IX, 86 x 28.....	65.75	66.25
IX, 88 x 28.....	67.25	67.75
IX, 90 x 28.....	68.75	69.25
IX, 92 x 28.....	70.25	70.75
IX, 94 x 28.....	71.75	72.25
IX, 96 x 28.....	73.25	73.75
IX, 98 x 28.....	74.75	75.25
IX, 100 x 28.....	76.25	76.75

American Tin Plates—

Charcoal Plates—Bright.

Minerva
IC, 10 x 14, 12 x 12, 14 x 20.....37 1/2¢
IX, 10 x 14, 12 x 12, 14 x 20.....62 1/2¢

Florence—
IC, 10 x 14, 12 x 12, 14 x 20.....85 1/2¢
IX, 10 x 14, 12 x 12, 14 x 20.....75 1/2¢

Aluminum—

No. 1 Aluminum (guaranteed over 98% pure), in rolling ingots
Small lots.....\$ 6.50
Ton lots.....\$ 6.50

No. 1 Aluminum (guaranteed to be over 98% pure), in 15 lbs for remelting
Small lots.....\$ 6.50
100-lb lots.....\$ 6.50
Ton lots.....\$ 6.50

No. 2 grade (guaranteed to be over 94% pure Aluminum), cast in ingots for remelting
Small lots.....\$ 6.50
100-lb lots.....\$ 6.50
Ton lots.....\$ 6.50

Antimony—
Cookson.....\$ 94.00/94¢
Hallett.....\$ 94.00/94¢

Brass—

Platished—.....net

Roll and Sheet—.....25¢/20¢

Brass and Copper Tubes—

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List April 9, 1894.

Plain Round Tube.

	Per lb.
1/2 in. up to 2 in.....	\$0.35
2 in. up to 4 in.....	.36
4 in. up to 6 in.....	.37
6 in. up to 8 in.....	.38
8 in. up to 10 in.....	.39
10 in. up to 12 in.....	.40
12 in. up to 14 in.....	.41
14 in. up to 16 in.....	.42
16 in. up to 18 in.....	.43
18 in. up to 20 in.....	.44
20 in. up to 22 in.....	.45
22 in. up to 24 in.....	.46
24 in. up to 26 in.....	.47
26 in. up to 28 in.....	.48
28 in. up to 30 in.....	.49
30 in. up to 32 in.....	.50
32 in. up to 34 in.....	.51
34 in. up to 36 in.....	.52
36 in. up to 38 in.....	.53
38 in. up to 40 in.....	.54
40 in. up to 42 in.....	.55
42 in. up to 44 in.....	.56
44 in. up to 46 in.....	.57
46 in. up to 48 in.....	.58
48 in. up to 50 in.....	.59
50 in. up to 52 in.....	.60
52 in. up to 54 in.....	.61
54 in. up to 56 in.....	.62
56 in. up to 58 in.....	.63
58 in. up to 60 in.....	.64
60 in. up to 62 in.....	.65
62 in. up to 64 in.....	.66
64 in. up to 66 in.....	.67
66 in. up to 68 in.....	.68
68 in. up to 70 in.....	.69
70 in. up to 72 in.....	.70
72 in. up to 74 in.....	.71
74 in. up to 76 in.....	.72
76 in. up to 78 in.....	.73
78 in. up to 80 in.....	.74
80 in. up to 82 in.....	.75
82 in. up to 84 in.....	.76
84 in. up to 86 in.....	.77
86 in. up to 88 in.....	.78
88 in. up to 90 in.....	.79
90 in. up to 92 in.....	.80
92 in. up to 94 in.....	.81
94 in. up to 96 in.....	.82
96 in. up to 98 in.....	.83
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100 in. up to 102 in.....	.85
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120 in. up to 122 in.....	.95
122 in. up to 124 in.....	.96
124 in. up to 126 in.....	.97
126 in. up to 128 in.....	.98
128 in. up to 130 in.....	.99
130 in. up to 132 in.....	1.00
132 in. up to 134 in.....	1.01
134 in. up to 136 in.....	1.02
136 in. up to 138 in.....	1.03
138 in. up to 140 in.....	1.04
140 in. up to 142 in.....	1.05
142 in. up to 144 in.....	1.06
144 in. up to 146 in.....	1.07
146 in. up to 148 in.....	1.08
148 in. up to 150 in.....	1.09
150 in. up to 152 in.....	1.10
152 in. up to 154 in.....	1.11
154 in. up to 156 in.....	1.12
156 in. up to 158 in.....	1.13
158 in. up to 160 in.....	1.14
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168 in. up to 170 in.....	1.19
170 in. up to 172 in.....	1.20
172 in. up to 174 in.....	1.21
174 in. up to 176 in.....	1.22
176 in. up to 178 in.....	1.23
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182 in. up to 184 in.....	1.26
184 in. up to 186 in.....	1.27
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190 in. up to 192 in.....	1.30
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202 in. up to 204 in.....	1.36
204 in. up to 206 in.....	1.37
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208 in. up to 210 in.....	1.39
210 in. up to 212 in.....	1.40
212 in. up to 214 in.....	1.41
214 in. up to 216 in.....	1.42
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218 in. up to 220 in.....	1.44
220 in. up to 222 in.....	1.45
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224 in. up to 226 in.....	1.47
226 in. up to 228 in.....	1.48
228 in. up to 230 in.....	1.49
230 in. up to 232 in.....	1.50
232 in. up to 234 in.....	1.51
234 in. up to 236 in.....	1.52
236 in. up to 238 in.....	1.53
238 in. up to 240 in.....	1.54
240 in. up to 242 in.....	1.55
242 in. up to 244 in.....	1.56
244 in. up to 246 in.....	1.57
246 in. up to 248 in.....	1.58
248 in. up to 250 in.....	1.59
250 in. up to 252 in.....	1.60
252 in. up to 254 in.....	1.61
254 in. up to 256 in.....	1.62
256 in. up to 258 in.....	1.63
258 in. up to 260 in.....	1.64
260 in. up to 262 in.....	1.65
262 in. up to 264 in.....	1.66
264 in. up to 266 in.....	1.67</

THE METAL WORKER.

NEW YORK AND CHICAGO.

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DAVID WILLIAMS, - PUBLISHER

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NEW YORK.....96-102 Reade Street.
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CINCINNATI.....Rooms 23-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....312 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 42 Cannon street, London, England.

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Accuracy.

Above all other elements in a workman's ability stands accuracy, without which all his work may go for naught. And yet, to many men quantity seems to stand before quality, at least to the extent that *almost* right is good enough. It is seldom that accuracy and extreme celerity go hand in hand. As a rule the accurate man, he upon whom one can always rely, is relatively slow. Nevertheless, when one compares his output of work which is always accurate with the net useful result of a lightning workman the balance is likely to tip in favor of the slow but sure method of doing things. Surroundings have certainly much to do with a man's ability to habitually turn out accurate work. In some establishments the incessant nagging and rushing, by unnecessary interference so upsets a workman that he is continually blundering. But there are other shops where, notwithstanding the fact that there is always a steady pressure to get work out, a man nevertheless feels that it must be right at all hazards.

Haste and Waste.

When the head of an establishment fully absorbs the idea that haste inevitably makes waste it will be seen that there is a way to get work out on time, to have it correct and to keep the workman in the best frame of mind to give his constant and undivided attention to his work. Accuracy on the part of the individual can certainly be cultivated, but nevertheless some men seem to be naturally far better equipped in this way than others. Acquired accuracy is a virtue, so to speak, of slow growth. It must, in fact, become a habit to be accurate, and, like all other habits, it must therefore be the result of repeated action. As each new job comes to the workman his determination must be

that this particular job shall be just a little better, a little nearer perfect, than the last. He must see to it that no move is made until he knows that it will bring the desired result, that no piece is cut until it has been measured and that it is not laid aside until its thorough completion is rendered evident by careful inspection.

A Pompeian Bathroom.

A very interesting discovery recently made near the old site of Pompeii is described in the European journals. A large building was unearthed on the property of a Signor de Proseco, containing several rooms, among them three bathrooms, furnished with large sculptured marble basins, heating apparatus, lead plumbing work, with bronze faucets, and tiled floors and walls. The three rooms correspond in their arrangements with the usual hot, tepid and cold baths usually found in the old dwellings of the wealthy classes. This is, however, said to be the most complete, richest and best bathing installation so far found. It has been so well preserved on account of the roof not having caved in during the great eruption of Vesuvius, which buried the city of Pompeii in the year 79. Most of the houses were entirely destroyed at that time, only a few vaulted structures resisting the immense pressure of the lava and ashes. This roof is nearly 45 feet in length.

Another Gasoline Field.

The intense heat that can be secured from gasoline has made it useful in specially constructed fire pots for plumbers. As the early apparatus has grown in popularity a large number of new devices, all of similar character, have come into the field. With the gasoline furnace no heavy fire pot and large bag of charcoal must be carried by the plumber's helper, and no bin for fuel storage is required at the shop. In operation there is no shower of sparks to burn the carpet or curtains in a dwelling, or to start a fire among the refuse in a new building. No time is lost in starting a fire, and no disagreeable smoke made. With the furnace filled at the shop and tightly closed no leakage can occur to make trouble. Some of these furnaces are so made that they can be used as a torch to melt off old fittings or to get up a heat, and without them a plumber would in many cases be at a loss for some convenient means of doing his work. It is safe to say that the cost of plumbing has been reduced by their introduction.

In some of the large cities, however, this indispensable helper of the suburban plumber is not used, either through adherence to past custom and blindness to its excellence, or owing to the prejudices of the insurance companies. Their entrance to this field will come, as their convenience is too great to be ignored, and the fact that they are used exclusively in both old and new work throughout the country is a sufficient guarantee against the supposed danger.

News and Notes.

Contracts are reported to have been signed for the elevation of the New York Central Railroad tracks in Buffalo, at a cost of \$3,000,000.

Referring to the threat of Germany to shut out American provisions, Phil. Armour quoted the export statistics the other day on the cattle and beef trade, which show that nearly all the American cattle and dressed beef go to England. What goes to the European Continent is, in comparison, a drop in the bucket. Mr. Armour expressed himself as undisturbed by any apprehension on account of German embargoes.

The annual report of the harbor master of the port of Montreal, Can., for 1894 shows that the tonnage of the sea-going vessels which arrived there during the year was 1,096,909 tons—a decrease of 54,868 tons as compared with 1893; and the tonnage of the inland vessels was 979,809 tons—a decrease of 73,791 tons. There was also a decrease of 12,977,909 bushels in the exportation of grain.

The United States Consul at the Straits Settlements calls attention to the fact that Russian petroleum is supplanting the American product in that region. He says the Russian facilities for handling it are superior.

Nova Scotia's coal output in 1894 was 2,055,114 tons, an increase of 86,500 tons over 1893. Exports to the United States exceeded 120,000, an increase of 100,000 tons as compared with the previous year, due to the lowering of the tariff.

The Wyoming Petroleum Company have been incorporated at Cheyenne, Wyo., with a capital of \$1,000,000, for the purpose of acquiring and developing oil lands in that State.

The Harland & Wolff Shipbuilding Company, of Belfast, Ireland, are reported to be in negotiation with a Liverpool company for the construction of two Atlantic liners, each to be 1000 feet long.

It is understood that the decision of the trustees of the Boston Franklin legacy to apply the same to the purposes of a trade school, pure and simple, will be adhered to. The trustees are said to be at present negotiating for the purchase of a suitable site for the school and considering plans for the buildings.

THE LETTER BOX.

Squaring the Circle.

From READER, *New York City*.—Please describe through the Letter Box of *The Metal Worker* the method of squaring the circle.

Answer.—A good many hard questions are asked of *The Metal Worker* and we try to answer them to the best of our ability. This, however, so far as we remember, is the first actually unanswerable question that has ever been propounded. To square the circle is to do what the mathematicians have been striving to accomplish for at least 20 centuries, and for how much longer we do not know. Squaring the circle, as technically understood, is finding the exact area of a circle. We can find it approximately, and so near in fact that the error is an infinitesimal quantity; but this is not mathematical accuracy. The difficulty heretofore encountered is that the relation between the diameter and circumference of a circle is an indeterminable quantity. The area of a circle is exactly equal to one-quarter the product of the circumference and the diameter. But the trouble is we cannot determine the length of the circumference from the diameter with absolute accuracy. The relationship is usually expressed by 3.1416, but that decimal can be extended without ever coming out even; in fact it has been worked out to over 100 decimal places. We trust our correspondent will, therefore excuse us for not answering his question. If any reader of *The Metal Worker* thinks he has solved this vexatious problem we shall be glad to hear from him.

Pattern for Fluted Cone.

From J. M. R., *Reading, Pa.*—Please inform me through *The Metal Worker* how to obtain a pattern for an article of which I send you a sketch. The idea is to start with a given diameter at the bottom and to die away to nothing at the top. Each piece to be cut to shape and raised.

Note.—The sketch given in our correspondent's letter shows a tapering helix in the form of a fluted cone. The work depends entirely upon raising the metal and the pattern cutting problem is not difficult. The fluted pieces which are twisted in the form of a helix and are tapered at the same time are merely long strips of metal of triangular shape—that is, they start from a point at the top of the helix, and are of the width of the base of the flutes at the other end. If we have misunderstood our correspondent's inquiry we shall be glad to give it further attention.

Weight of Air.

From H. T. G.—Please inform me what is the weight of a cubic foot of dry air at 5°, 10°, 15°, 20°, 25°, 30°, 35° and 40° below zero?

Answer.—As a result of experiments made by Biot and Arago, it was determined that 100 cubic inches of dry air, with the barometer at 30 inches, and the thermometer at 60° F., weigh 31.074 grains. Then 1 cubic inch of air would weigh 0.31074 grain. As there are 1728 cubic inches in a cubic foot, $0.31074 \times 1728 = 536.958$ +, or nearly 537 grains of dry air in 1 cubic foot, according to the above conditions. Thus 1 cubic foot of air under ordinary circumstances weighs about 1½ ounces. As a rise of temperature of 1° F. causes air to expand one-four hundred and eightieth of its bulk, 1 cubic foot of air would be one-four hundred and eightieth part lighter for each degree of rise in temperature. Accordingly we can consider that 1 cubic foot of air would be one-four hundred and eightieth heavier for each degree the temperature was lowered, being under the same conditions. By dividing 536.958 grains, the weight of 1 cubic foot of air, by 480, the quotient, 1.118+ grains, is the increase in weight for each degree the temperature is lowered. As we wish first to obtain the weight at zero, we multiply 1.118 by 60, and add the result, 67.08, to the weight 536.958; the sum of the two is 604.038 grains. As 1.118 grains is the increase in weight for each degree the temperature is lowered, $1.118 \times 5 = 5.59$, the additional weight for each 5°. As a matter of convenience we may consider the weight of 1 cubic foot of air at zero to be 604.04 grains, and that 5.6 grains are to be added for each 5° the temperature is lowered. According to the above calculations the weight of 1 cubic foot of air at the temperatures given would be as follows:

604.04 grains at zero.
600.64 grains at 3° below zero.
615.24 grains at 10° below zero.
620.84 grains at 15° below zero.
626.44 grains at 20° below zero.
632.04 grains at 25° below zero.
637.64 grains at 30° below zero.
643.24 grains at 35° below zero.
648.84 grains at 40° below zero.

As the above are supposed to be Troy grains, and as there are 7000 Troy grains in 1 pound avoirdupois, $7000 \div 16 = 437.5$ grains per ounce avoirdupois. Then at 40° below zero the weight of a cubic foot of air, under the conditions above named, would be 648.84 divided by 437.5 grains, or 1.483 ounces.

Condensation Under Iron Roof.

From J. D. S., *Fredericton, N. B.*—As I have always been benefited by the information contained in the Letter Box, I now ask *The Metal Worker* to assist me in my present difficulty. Last fall we put a galvanized iron roof on a building 40 x 100 feet, having a pitch of about $\frac{1}{2}$ inch to the foot. The roof was laid with tongued and grooved boards, and covered with tarred paper before we put on the galvanized iron, which was No. 26, and put on over a wooden roll, the seam being on top. The cross seams were well grooved and soldered. We did not have any trouble from leaks during the heavy fall rains, nor until cold weather set in, when we had a spell of soft weather. There was about $\frac{1}{2}$ inch of snow on the roof when it began to drip in several places. The building is of brick, four stories high, and the upper stories are used for storage and are not finished. Would the building, being just finished and consequently not thoroughly dry, cause the dampness? We have laid several roofs like the above mentioned and have had no trouble from them, but the buildings are all finished inside, being lathed and plastered under the roofs. What is best to do to stop the "leaks," which to my mind are caused by condensation?

Answer.—As there was no drip or leak from the roof during heavy rains, it would indicate that the seams did not leak. Such being the case, it would appear that our correspondent was right in supposing the drip was caused by condensation. However, as it is possible that the subsequent cold weather may have caused the roof iron to contract sufficiently to crack the seams, it might be well to give the roof a thorough inspection. When a building is provided with a metallic roof which is so arranged as not to prevent moisture from coming in contact with its under surface, and when the weather is sufficiently cold, the moisture evaporating from the building coming in contact with the surface of the roof covering is sometimes condensed in such quantities as to run along the roof boards until an opening is found, and drips upon the floor below. The obvious method of stopping this condensation is to prevent the moist air from coming in contact with the roof. This might be accomplished by covering the underside of the joist with building paper or lath and plaster. If this cannot be done, it might be well to place ventilators in the roof so the evaporation from the building can be carried off. This latter plan has often been followed with success. We would be glad to have suggestions from our readers.

Flux for Soldering Zinc.

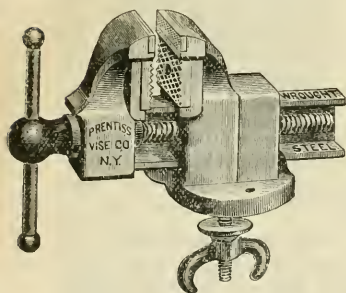
From J. S. Z., *Richmond, Ind.*—Is there any other flux besides acid diluted with zinc which can be used successfully for soldering zinc, thus doing away with the discoloration of work after it is finished? If any of your readers know of a substitute which will not have this effect on finished zinc work I will be pleased to have them tell me what it is through the Letter Box.

Wanted, Show Window Suggestions.

From W. S. L., *New York.*—I am a young tinner who is looking for something to work at during the long winter evenings. I have already made a couple of models which have been used successfully for window display, and I am now looking for some other notion to work on. I would be very glad if the readers of *The Metal Worker* could help me with suggestions in this line.

Prentiss Improved Pipe Vise.

Prentiss Vise Company, 44 Barclay street, New York, have brought out an improved combination pipe vise, as



Combination Pipe Vise.

here illustrated. The main feature is the sliding bar, made of wrought steel, which is a decided gain in tensile strength compared with the cast iron part which is superseded by it. This detail, it is claimed, adds much to the life of the vise. The steel plate pipe jaws or grip plates used with this vise are, it is stated, made of the best steel, carefully tempered. They are deeply serrated at right angles, forming innumerable points. The plates are reversible and interchangeable and full width of the vise, thus giving greater holding contact, with, it is pointed out, much less pressure on the pipe than with the old style concave jaws.

In a recent communication to the Mining Society of Nova Scotia, C. E. Willis states that the district near the eastern coast of Port-au-Port Bay, Newfoundland, is seams in many places with asbestos. He says that the metamorphous rocks and serpentine of Quebec dip under the Gulf of St. Lawrence to reappear on the western coast of Newfoundland, and extend probably across the island. Only surface work has been done so far, but the asbestos fiber is claimed to be of good quality, up to 2½ inches long, and practically identical with the well-known Canadian product.

The Odorless Steel Sanitary Dump Cart.

The cuts shown herewith represent a steel dump cart, offered by the United States Sanitary Company, 618 Pennsylvania avenue, Washington, D. C. The cart is described as having a body made of the best flange steel, thoroughly



Fig. 1.—The Odorless Steel Sanitary Dump Cart.

riveted, and provided with a built up axle, which enables that portion of the axle that passes through the body to be incased in a steel boiler tube, expanded at the ends, and as having all joints air and water tight. There are two lids or doors, one at the back and one at the front, for greater convenience in loading, these being made with deep flanges, to close as tightly as possible. It is explained that the lid at the rear is operated by a spring handle on the side of the body, which works easily, the

and thoroughly wash the interior in every part. In construction either the Archibald iron hub, the plain wood hub, the Warner or Sarven wheel is used, as may be desired. It is stated that the axles are entirely of steel, and are all to standard size; that the castings are of gray iron, steel and malleable iron, and that the axle nuts, boxes, arms, spindles and drops are interchangeable, so that they may be renewed at small expense



Fig. 2.—Cart in Dumping Position.

lid being locked in any of three positions—shut, half open for loading, or open all the way for dumping. The distance from the ground to the top of the tank or body, when the tank is level, is 4 feet 4 inches, and, if desired, for easy loading the body can be adjusted at an angle which will bring it 2 feet lower. The lids covering almost the entire top makes it possible to load the cart at either end, thus filling the body full. It is stated that the dumping gear is so arranged that when the cart is fully loaded it can be dumped completely by a boy; and that when it is desired to clean the cart after emptying, by opening the lids and adjusting the body to the desired angle it is possible to reach

The large cart has a capacity of 54 cubic feet and weighs, empty, about 1500 pounds. The small one has a capacity of 37 cubic feet and weighs, empty, 1300 pounds. The company remark that their aim is to produce, at a reasonable price, a vehicle of the highest grade, that will do its work in the easiest and most efficient manner. The carts are designed for handling garbage, night soil, material from sewer inlets, street sweepings, lime, mixed mortar, &c. The company advise us that they will be pleased to correspond with cities, towns, corporations or firms desiring to put the carts in service, and that they will gladly quote prices or give any desired information.

PLUMBING and GAS FITTING.

Newark, N. J., Plumbers.

The first annual concert and ball of the Master Plumbers' Association of Newark, N. J., was held in the Krueger Auditorium on January 15. The Auditorium has a fine dancing floor, a handsome stage, where the Voss orchestra discoursed a select musical programme, and along each side are balconies with the space below inclosed by a railing for spectators. The Committee of Arrangements—Wm. Jacob, F. J. Sturn and Jacob Rau—had a pretty programme of the dances distributed during the grand march, which was led by Nathan Steiner and Miss Schaeffer.

The gathering was notable for the number of handsomely costumed ladies who gave grace and beauty to the occasion and were quite the feature of it.

H. V. Ammermann, W. Zelf and Charles Geissle were the Floor Committee, and the dances were liberally patronized. The Reception Committee were Elias Berla, Charles E. Bond, E. J. Leonard, Jos. A. Smith, C. Sullivan, Walter P. Dunn, Franklin B. Sandford, James C. McGuire, R. J. O'Crowley, Francis Lang, Chas. B. Zimmerman and Ira Budd. Among the guests were State Vice-President John Hickman, Levi McBride, J. T. McNabb and Jas. Kearney of Paterson, L. J. Parks, Geo. W. Plastow, National Executive Clerk W. E. Crosby, Alexander Don, C. P. Vanderveer, G. F. Hickmot, J. Conover, R. Doremus, Wilbur Doremus, T. H. Hoover and a host of other friends of the members with their ladies. During the evening an intermission was called when all marched to the banquet hall, where an elaborate menu was served in excellent style. At the close of the banquet President Berla made some happy remarks, among which was the statement that plumbers were better men on account of having better halves, and added that the evening of the entertainment was honored in being the anniversary of the birth of Mrs. Wm. Jacob, to whom he had the pleasure of presenting a basket of beautiful flowers in behalf of the association. On leaving the banquet hall dancing again became the pleasure of the hour until the gathering dispersed with happy recollections and kindly wishes for the Newark plumbers.

Master Plumbers and Knights of Tabasco.

We have received the following letter from James F. Davlin, president of the Somerville Association of Master Plumbers, on the action of the National Executive Committee vs Knights of Tabasco:

I write to express my approval of the article in your recent issue from our honored national president, John Mitchell, wherein he very politely, yet forcibly, advises the Knights of Tabasco to refrain from attending the national conventions of the master plumbers in the future:

I admire the gentlemanly manner in which President Mitchell voices the sentiments of the National Executive Committee and many members of the last conven-

tion in Detroit, myself among the number, and while I do not care to add anything to what Mr. Mitchell has written, I believe it would be much better if the delegates to the national gatherings were left wholly to the local society with such provisions as are usually made by the national body while attending the convention for such pleasures as may be practicable after the labors of the convention are ended, but while the convention is in session I hold that the delegates who attend to their duty and take such interest in the proceedings as is necessary for an intelligent discharge of such duty, will be benefited far more by a restful evening between sessions and better fitted, physically and mentally, to consider, discuss and dispose of the many questions of great interest to the craft which will come before them for action. My experience has taught me that from the time the gavel of the presiding officer calls the convention to order until it falls to announce the close of the proceedings, every moment is fraught with interest and responsibility to the delegates, individually and collectively. Therefore, I say that it requires all the mentality of all the delegates in all its strength and vigor to properly perform their duties. While I recognize the good intentions and genial motives of those generally good fellows—the Knights of Tabasco—I agree fully with President Mitchell and the members of the Executive Committee in the advice given to the knights *enent* our national conventions, and I hope to hear from every quarter of the country where master plumbers are organized a hearty approval of the wisdom of our national officers. I am not going to say one word about the (in my opinion) hasty and injudicious communication of the "Old Pepper," other than to remark that he has got himself in a pickle.

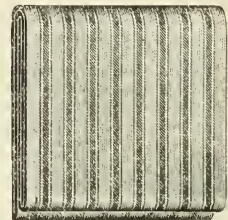
Modern Plumbing Regulations

The old plumbing regulations of New York City do not cover the advance made in plumbing practice and material, and in the Department of Buildings this is recognized. Superintendent Thomas J. Brady has had prepared new regulations for lighting, ventilation and plumbing, and they are now under consideration. This step has been necessary to meet the rapid progress that has been made in these trades. Wrought iron or steel pipe has come largely into use in the recent past, and in some cases lighter pipe than is desirable has been employed. The different weights and grades have been investigated and only a heavy pipe of the best quality will be recommended by the department. Brass pipe also is more largely used in plumbing work than heretofore, and pipe of the caliber known as iron pipe size is the only kind that will come up to the standard of the department. It is known that some of the brass thimbles, solder nipples, &c., formerly used, have been of very low grade metal and very light, so that it was difficult to tin them and wipe a proper joint, and in caking a joint with one of these ferrules, to make a soil pipe connection, they frequently caved in or assumed an irregular form, making a tight and perfect union almost impossible. The investigations of material have been exhaustive, and in consideration of the best interests of all from a sanitary standpoint the recommendations are for a high standard. The same character of investigations and recommendations have been made in reference to lighting and ventilation. These steps are in the

right direction, and the matter is now receiving consideration as to its final disposition.

Columbia Wiping Cloth.

The illustration of the wiping cloth presented herewith shows a cloth that is being sold by the J. W. Chamberlain Company, Bangor, Me. The cloth, the makers advise us, is made under the personal supervision of a plumber of more than 30 years' experience, and its particular features of merit are alluded to. The cloths are made of special



Columbia Wiping Cloth.

ticking and have, we understand, been used with the most satisfactory results by plumbers.

Wisconsin Plumbers.

Last week 75 plumbers from all parts of the State met at the St. Charles Hotel, Milwaukee, Wis., and formed the Master Plumbers' Association of Wisconsin. L. H. Plum, president of the Milwaukee Master Plumbers' Association, opened the meeting and made an address of welcome. State Vice-President W. H. Halsey of the National Association of Master Plumbers received the new organization into membership. Forty-eight firms from the State at large were represented. They were as follows: Joseph Callahan, Green Bay; George Kraft, Madison; Anton Metz, Madison; O. K. Patterson, Stevens Point; J. P. Wray, West Superior; Louis Sontag, Sheboygan; William Hardecker, P. J. Dullanty, Ashland; H. L. Larsen, Manitowish; R. C. German, Janesville; Behrens & Reeke, Sheboygan; Charles Heeskelar, Eau Claire; William Lekland, Sheboygan; W. Goddard, Oshkosh; Murphy & Fredel, Fond du Lac; O. A. Jones, Oshkosh; G. L. Kruse, William Brechtel, Sheboygan; Thomas F. Delany, John F. Lee, Wausau; Thomas & Anheiser, Nelson Skog, Green Bay; Anton Brehme, Fort Howard; A. B. Taylor, Fond du Lac; John Wahler, Duncan McTavish, Harry Morris, H. Raymond, Coffee & Williams, Racine; J. P. Fox, Eau Claire; David Ahron & Son, Fond du Lac; Stack Bros., Burnett & Son, West Superior; C. S. Gregory, Beloit; W. S. Patterson, Appleton; A. F. Shoenoff, Menomonee; Neil & Co., West Superior; A. V. Fetter, La Crosse; P. H. Ryan, Appleton;

George B. McCall, Chippewa Falls; Charles Hewlett, Racine; James A. Trane, William Wenzel, Appleton; J. H. Case & Co., Green Bay; Jackson & Longthorn, Kenosha.

After appointing committees on Constitution and By-laws and Resolutions the following officers were elected:

President, P. H. Ryan, Appleton.
Vice-president, George B. McCall, Chippewa Falls.

Secretary, W. S. Patterson, Appleton.

Treasurer, Charles Hewlett, Racine.
Sergeant-at-arms, John D. Jackson, Rhinelander.

The following committees were appointed:

Constitution and By-laws: J. P. Fox, C. S. Gregory, John F. Ahearn.

Resolutions: Louis Sontag, William Hardecker, O. K. Patterson.

The association will favor a bill at the coming session to appoint boards to license plumbers and supervise the business of plumbing. The bill creates a board of examiners in every town of 5000 inhabitants, consisting of the chairman of the Board of Health, the building inspector and a third member who shall be a master plumber, who shall be appointed by the mayor and be allowed \$5 per day for actual service. These boards shall license applicants who are deemed competent, at the rate of \$2 for master plumbers and 80 cents for journeymen plumbers. The bill also provides for an inspector of plumbing in every city of 5000 inhabitants. The bill provides that the common councils of cities of 5000 shall pass rules for materials, construction, alterations and inspection of pipes, faucets, tanks, valves and fixtures, which shall be binding on all builders, under penalty of \$50. It was decided to hold the next annual meeting in Racine January 9 and 10, 1896. George B. McCall of Chippewa Falls, J. P. Fox of Eau Claire and President Plum were selected as delegates to the National Association of Plumbers in Philadelphia, June 5 and 6, 1895. Before adjournment the convention passed a vote of thanks to the Milwaukee local association for courtesies received.

The Milwaukee Association entertained the delegates with a theater party and a banquet.

Scranton Plumbers Organize.

A meeting was held by the master plumbers of Scranton, Pa., in the rooms of the Builders' Exchange last week, for the purpose of forming an association. This movement was brought about by James F. Traynor, president of the Master Plumbers' Association of Wilmington, Del., who was appointed by National President John Mitchell for the work of organizing new associations.

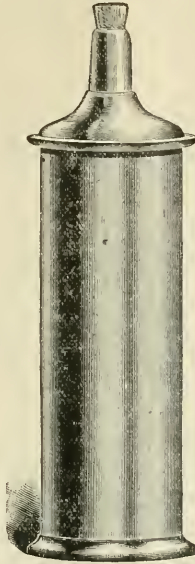
William Stephens, a prominent member of the Wilkes-Barre Association, was also present. There was a large attendance of the local plumbers, and they were all enthusiastically in favor of organizing and every man who had not a pressing business engagement attended the meeting. The officers elected are:

President, H. J. Gunster.
Vice-president, Thomas Mullen.
Secretary, John J. Gorman.
Treasurer, John J. Howley.

L. H. TILLINGHAST & Co., Providence, R. I., dealers in plumbers' supplies, have been incorporated as the L. H. Tillinghast Supply Company.

Handy Pocket Torch.

Kendrick Valve & Washer Company, Syracuse, N. Y., manufacturers of pump valves, plungers and specialties for plumbers' steam fitters' and tinmiths' use, are offering a handy and useful torch for this class of mechanics. It is designed to supersede the candle, giving a much better and safer light, with none of the candle's untidy characteristics. It is 4 inches long and 1 1/4 inches in diameter. The tube is filled with cotton to be saturated with gasoline or oil, and a wick placed in the tube, which is covered with a cap. The bottom is fitted with a screw cap which



Pocket Torch, Full Size Cut.

can be readily removed for filling. The torch is polished and nicked. When not in use the burner is covered with an extinguisher or cap.

Benefits from Organization.

Many of our readers will be interested in the following letter from John Mitchell, president of the National Association of Master Plumbers:

A short time ago I received from an association organized but a few months previous to the last national convention an inquiry as to the benefits derivable from membership in an association. So much has been written on the subject by able writers, who have had the interest of the association at heart and whose official positions enabled them to write intelligently on the subject, that the query appeared to me extraordinary. I can but voice the sentiments heretofore expressed. A "Philadelphia plumber" has offered some timely advice on the proper selection of local officers. Ex-President Hannan has written on "The Benefit of the National Association," while an energetic secretary of a new thriving association located outside of our domain—J. W. Hughes of Montreal—has declared that "even the very plumbers have a soul to be saved." However, it may not be out of place at this season of the year, when associations are starting in on a new year of either success or failure, for me to give the lukewarm associations a few hints as to what beneficial results may be secured by a properly conducted master plumbers' association.

Judging from the tone of some of the letters received at this office, there is an apparent lack of interest manifested by both members and officers of some local as-

sociations. To continue on without overcoming this feeling of unconcern in self-preservation, or associated existence with inimical relations between members, is, I must frankly admit, a useless expenditure of time and money. An association can be a success only so far as each member contributes his influence in making it so.

FORTUNATE ASSOCIATIONS.

There may be communities of plumbers so fortunate as to have no need of associated harmonious action. They may be so friendly, one with the other, that they speak as they pass; will impart to a fellow craftsman a bit of information—I hear you are going to do some work for Mr. Neverpay. Well, 'old fellow, you are most welcome to his trade. I refused to do any more until he paid up. I hope he will not cheat you," and will refuse to do work for a party when a member has not been paid. If this kind of fellowship prevails in your city you have reached the acme of perfection. Manufacturers may be selling only to the trade in your city. If so, pause for a moment and consider what influence wrought the change, for did it exist before the formation of the National Association? If you feel that you have secured all these benefits from your association and affiliation and that you can no longer afford to support the grand national organization, silently offer thanks to those who have spent time and money in the elevation and protection of our craft. Do not be so ungrateful as to now question the association's influence for good. You can render to your less fortunate fellow members an invaluable service by lending your influence to the cause and imparting to them the secrets of your success.

LUKEWARM ASSOCIATIONS.

If on the other hand there are associations that feel there is a chance for improvement, which I mistrust exists, I respectively dedicate to them these words with the sincere hope that they may incite them to renewed and well directed efforts.

"LIVE AND LET LIVE."

In these days of sharp competition considerable rivalry among master plumbers prevails in localities, and it is to be deplored that it sometimes reaches enmity; operating to the detriment of all, and especially disastrous during general financial depression, when instead of pursuing the policy of "the dog in the manger," making nothing yourself nor allowing your neighbor the chance, you should have done as has been done in some associations—"live and let live." Or reversing the phraseology of the terse maxim: Allow others to live and they will do likewise.

I have found the feeling of antagonism so great in localities that actually one plumber would go on the other side of the street rather than meet his neighbor in the same line of business. And for what reason? In the majority of cases simply because he has met you in what should be honorable competition—figured on a job too low, secured it, and then has done what you would have done from necessity; slighted the work and substituted material where possible. Then what have you done? Taken means to have the owner informed that your competitor has done so and so. What is the result of all this? The owner, or builder, to say the least, makes it disagreeable. He may refuse to pay. Your competitor is compelled to sue and jeopardize the motive actuating him at first; that is, if he could once do the work, he would in the future have the preference from that owner. It is most pleasing to note that there are many master plumbers above this kind of rivalry. They can be picked out, as they have always worked at living prices. The supply houses know them, for they can promptly pay their indebtedness. But there are many who might be likened unto the dog in the manger who could not eat hay, but contemptuously jumped into the manger, biting and starving the horse.

A GOOD FOUNDATION.

Before you can expect to inaugurate reform you must first have a good foundation on which to build. It is as truly essential that the underlying principles, the stability and unity of the association, should be strong, as it is that the foundation of the building should be solidly constructed; otherwise, it is like a "house built upon the sand," the first wave of disension causes destruction. For attempting to carry out measures for the aggrandizement of members sheathe the knife you

have carried up your sleeve so long and be ready to greet your fellow member cordially, show him by your action that you trust him and he will soon learn to trust you. Have a good word for him and he will remember you kindly.

While dictating this paragraph a business man came into my shop, exclaiming: "My wash bowl has given out." Without giving me a chance to inquire the cause he anxiously volunteered the information, which he supposed would make me happy. The plumber who put it in was a fraud. The countersunk piece in the bottom of the bowl, connecting with the plug and coupling, had pulled out. I said: "It is not the fault of the plumber, but an unforeseen flaw in the bowl." He looked astonished that I disagreed with him; but do you think he would have had more confidence in me had I agreed with him in denouncing a neighbor's work?

Let it be written in your constitution that you will do unto others as you would wish others to do unto you. I fancy my readers smiling at the scriptural injunction as impossible, and each saying, "I would do it, but the other fellow would not." That is the trouble—distrust. There is an association that has made this injunction rather obligatory by means of a fine for a violation of the principle. Means are adopted to collect the fine. One day is explained, which means forfeiture of offender's share in the treasury, containing several thousand dollars.

THE WAY TO BE BENEFITED.

It very frequently happens that bills are brought in for criticism, the recipient expecting that he will be assured of the expediency of the bill and receive a hint that he had better patronize the only practical plumber he would not have been thus annoyed. I call to mind a large association that has adopted a schedule of prices to obviate this practice, and which has given satisfaction. If the bill is brought in for denunciation the plumber looks it over, and if in accordance with the schedule prices, "It is the same as I would have charged." Try it and you will never have some customer say you have robbed him, and as a result lose his trade.

Agree to finish no work for an owner on which a member has been employed and for which he has not been fully paid. Sometimes a settler cannot be secured by reason of alleged inferior workmanship or a non-compliance with an architect's whim. It may be owing to a failure of the owner or builder. The failure of a plumber to get his pay means his inability to pay the supply man. The supply man will realize this and will advise you. Try this, and you will find that each member has a great financial advantage over non-members.

Agree to sell no goods you do not put in, and then members of the craft will never have a customer say, "I have some goods which I want you to put in." An instance came to my notice a short time ago where a city plumber sold some material to a suburban resident, who went to his local plumber to have the work done. The local plumber was a member of the National Association, and supposed he had a clear case against a dealer, but found that some brother plumber had wronged him. Adopt this rule and you will have less complaints to make.

Agree to put in no material that you do not furnish, for you can't afford to guarantee goods that you do not buy. A strict compliance with this rule will tend to owners who have plumbing to do that it is to their advantage, with regard to sanitation and cost, to deal with the plumber exclusively.

Did you ever contract to do a job, and a little later be informed by your journeyman that they must have an increase in wages, which you cannot afford to give, as you had figured on a certain rate? Too much importance cannot be laid upon the beneficial results of harmony between employer and employee. Conference committees I have always found to be most satisfactory. In some cases unwarranted ruptures have occurred; conference committees have been discharged and conflicts have followed, where, had the pleasant conference relations existed, disputes might have been amicably adjusted without recourse to strikes. I hope for the time when all associations will have a regular conference committee to meet with the journeyman and then all master plumbers will know in advance what wages they are to pay.

Can you reckon the monetary value to be derived from each one sincerely following out the above suggestions, each one of which has been successfully pursued in several sections?

AFFILIATION WITH THE NATIONAL.

But little explanation is needed with regard to affiliation with the National Association. The Baltimore resolutions are known from the Atlantic to the Pacific. There are many complaints of alleged violations, but the records of this office show that 90 per cent. of the complainants have been unable to substantiate their charges. Cases have occurred where it was apparent that the manufacturer had sold to the consumer. Little indignation meetings have been held, and committees appointed that have found that the supposed faithless manufacturer held an autograph order from a master plumber to deliver goods to a consumer; thus signing away his rights to the detriment of himself and associates. It is this class of plumbers who are the loudest in their denunciations.

One member came into my shop a few days ago denouncing the Baltimore resolutions, and come to find out he had never read them over, and, therefore, did not live up to them.

CAN YOU ATTEND TO LOCAL COMPLAINTS?

There are many petty complaints which local associations can adjust with more rapidity than the National, because of distance and meager information. Many associations are able to adjust complaints today, but if they stood alone and did not have the representative master plumbers throughout the country to espouse their cause and act in case of failure, could they succeed?

It is not a strange occurrence to get no more information in a communication than the following: "Mr. Smith of this city has received a shipment of goods from Mr. Dealer. Attend to it promptly." If you write for further information you may not receive a reply, or if you are so fortunate you are liable to be accused of asking for useless information in order to indefinitely postpone action, or you may be accused of presuming to doubt the correctness of his statement.

THE NATIONAL READY.

The National Association is ready at all times to assist locals in the amicable adjustment of all violations of the protective regulations. It is not the fault of the National officers that some associations do not receive what they call "the worth of their money."

The lukewarm association might be likened unto a patient, and the National a physician. If the physician prescribes medicine and treatment for the recovery of the patient and the patient has no faith in the advice and medicine, partly carries out the instructions, or, as sometimes happens, does not carry them out at all and does not use the medicine because it is a little inconvenient, and does not recover, or what is more likely grows worse, who is to blame, the patient or the physician?

TRAPS AND VENTS.

JOHN MURRAY and F. H. CLOSE have formed a partnership in the plumbing line under the name of Murray & Close, at Jackson, Mich. Mr. Murray is well-known in that city, having been a plumber there for 40 years. Mr. Close has been connected with the Michigan Heating & Plumbing Company since their inception.

FRED W. GORE, who has been with the Chippewa Falls Plumbing & Supply Company and their predecessors for six years, is opening a plumbing shop of his own at 108 West Central street, Chippewa Falls, Wis.

FROM one who has had experience comes the statement that when seamless drawn brass tubing is used where there are great changes of temperature, it should be ordered slightly annealed. Tubing that has been drawn by several processes under heavy pressure has at times shown a tendency to become brittle in places; then owing to the unequal expansion and contraction in the hard and soft places under a change of temperature, it has been known to split or crack. To prevent such a contingency a slight annealing has been found all

that is necessary. Piping for hot water service is likely to have a change of 100° in a short time quite frequently; but it is said if the pipe is properly annealed no disagreeable results may be expected.

THE EXECUTIVE BOARD of the Master Plumbers of Connecticut met in the Hotel Russwin, at New Britain, Conn., last week. The business of the year was balanced and preparations were made for the annual convention to be held in Waterbury, February 6. Those present were John Ahearn of Hartford, J. B. Weiant and J. S. Stone of New Britain, S. E. Dibble of New Haven, C. S. Fames of Bridgeport, John Stevens of Hartford and Messrs. Disley and Barrow of Waterbury.

A NEW PLUMBING FIRM have been organized in Lafayette, Ind., to be known as Seagraves, Cochran & Co., who have absorbed the business of Sheehan & Co., and are established at 134 East Main street. The firm are composed of D. C. Seagraves, who has been with Wallace Bros., and W. F. Cochran, who has been with the O. P. Benjamin Company, and W. L. Sheehan, the senior of the late firm of Sheehan & Co.

THE H. MUELLER MFG. COMPANY, Decatur, Ill., issue an eight-page circular of Mueller's patent stop and waste cock, showing the many different convenient forms in which it is made. It also shows the Mueller patent basin clamp, which suits any thickness of basin, and, it is said, cannot slip.

THE BOARD OF CITY RECORD OF New York has ordered the issue of 400,000 circulars to householders, giving sanitary instructions. The circulars will be distributed by the police as soon as they can be printed.

THE MASTER PLUMBERS of Waterbury, Conn., held a meeting last week in the Board of Trade rooms and began their arrangements for the annual convention of the master plumbers of the State, which will be held in that city, in the City Hall, on February 6. The convention will be the fifth annual and the address of welcome will be made by Mayor E. G. Kilduff. The following committees were appointed: Reception, W. E. Disley, M. J. Daly and Patrick Garrity; Music, W. E. Booth and Edward Casey; Finance, Edward Casey and William Minor; Printing, Robert Walker. After the convention, the delegates will be banqueted at the Scovill House.

SOME DISCUSSION is going on at Toledo, Ohio, over the water works trustees selecting two water meters from which to make a choice, instead of letting a consumer select any meter he prefers.

JOHN BRADY has opened a plumbing shop on Gold street, Bridgeport, Conn.

C. F. DEVENNISH, City Inspector of Plumbing and Drainage, at Columbus, Ohio, has submitted his annual report to Health Officer D. N. Kinsman, by whom it has been approved. The inspector bears very strongly upon the necessity of issuing plumbing licenses to master plumbers and journeymen who are competent in every respect to do the work and requiring them to pass rigid examinations in the rules and regulations as established by law. Thousands of dollars are expended in beautifying buildings, while the sanitary appliances do not receive the consideration they deserve. Following is part of the work to which the report refers: Inspection

new plumbing work in new and old buildings, first and second inspections, 273; new work not accepted until plumbing rules were complied with, 37; changes ordered in sewerage and drainage, 48; owners notified of work not approved, 15; defective plumbing ordered remodeled, 18; defective plumbing repaired on complaint, 93; buildings, public and private, inspected, 218.

A MASTER PLUMBERS' ASSOCIATION has been organized at Allentown, Pa., and the following officers have been elected: President, J. H. Birchall; vice-president, J. C. Bitterling; secretary, August Leibold. This association will be affiliated with the National Association of Master Plumbers.

THE CODY PLUMBING COMPANY succeeded the Cody-Hieline Company at Minneapolis, Minn.

HUGHES & BROOKS succeeded John F. Hughes in the plumbing business at Little Rock, Ark.

FIRE, on January 12, destroyed the plumbing shop of Rogoski & Dungan, Little Rock, Ark.

THE MASTER PLUMBERS of New Hampshire met in Manchester recently and discussed the feasibility of advocating a State law controlling plumbing.

SAMUEL McFARLAND has been engaged by Peck Bros. & Co., New Haven, Conn., to visit the architects and plumbers in New York in the interest of their line of sanitary specialties. They have a fine showroom at 16 East Twenty-third street, New York, under the management of C. M. Coleman.

MAYOR HENDRICK of New Haven, Conn., has appointed Dr. Joseph F. Townsend and Samuel E. Dibble to serve for three years on the Board of Health. These appointments are highly commended by the *Evening Leader* of that city. Mr. Dibble is well known to the plumbing trade throughout the country and his appointment will be gratifying to them. It is a matter of regret that there are not more master plumbers of Mr. Dibble's kind appointed on health boards throughout the country.

THE CHICAGO MASTER PLUMBERS' ASSOCIATION will hold their annual reception and ball on the 30th inst., at the Auditorium, having secured the banquet hall for that purpose. The arrangement committee consists of Paul Redieske, Thomas Conway, P. Sanders, Alexander W. Murray, G. A. Larson, T. P. Culloton, P. M. Murphy, C. C. Breyer and J. B. Breen. The annual ball is always an important event with the Chicago plumbers, being much more of a social occasion than balls usually are. This will undoubtedly be a most enjoyable gathering.

THE BROADWAY PLUMBING COMPANY has been incorporated in St. Louis with an all paid capital stock of \$1000.

THE CLEVELAND MASTER PLUMBERS' ASSOCIATION held their regular bi-weekly meeting last week in the Builders' Exchange, Cleveland, Ohio. After a discussion of trade matters the following officers were elected: D. H. Roberts, president; Eb. Allen, vice-president; S. W. Burrows, treasurer, and L. Bonesteel, secretary.

THE MASTER PLUMBERS' ASSOCIATION of St. Louis have elected officers for the current year as follows: President, John Mahon; first vice-president,

W. H. Kuhns; second vice-president, William Schwehr; recording secretary, William F. McCormack; financial secretary, John P. Kelleher; treasurer, E. J. Lonergan; sergeant-at-arms, A. J. Gallagher.

THE IOWA STATE PLUMBERS' ASSOCIATION will hold its annual meeting in Burlington, beginning January 22 and continuing until the evening of the 24th. The local committee of arrangements consists of Henry Ewinger, Geo. Stewart and C. G. Bosch.

Connecticut's Proposed Plumbing Law.

Through the courtesy of the secretary of the Connecticut State Association of Master Plumbers, John S. Craig, 59 Farrington avenue, Hartford, Conn., we have received a copy of the proposed plumbing law that has been introduced in the Legislature. A committee has been appointed by the association to give such information and assistance as are necessary to aid in securing its enactment. The text of the proposed law is as follows:

AN ACT RELATIVE TO THE LICENSING OF PLUMBERS AND THE SUPERVISION OF THE BUSINESS OF PLUMBING.

Be It Enacted by the Senate and House of Representatives in General Assembly Convened.

SECTION 1.

No person, firm or corporation shall engage in or work at the business of plumbing either as a master or employing plumber or as a journeyman plumber, unless such person, firm or corporation has received a license therefor in accordance with the provisions of this act.

The word "plumber," as used in this act, shall be deemed to mean a person who has learned the business of plumbing by working for at least three years either as an apprentice or under an agreement for instruction, and who has then worked for at least one year as a journeyman plumber. The word "journeyman," as used in this act, shall be deemed to mean one who personally does any work in plumbing, the doing of which is subject to inspection under any ordinance, by-law or rule passed under the authority of this act.

SECTION 2.

That within thirty days after the Examining Board, hereinafter provided for, shall have organized, every person, firm or corporation at the business of plumbing in this State, prior to the 1st day of June, 1895, and desiring to engage in or work at said business, in any city or town where licenses for plumbing are required, shall register his name and address at the office of the Board of Examiners, to whom applications for licenses are to be made, in such city or town, and state under oath when and how long he has been engaged in or has worked at said business, and whether as master or employing plumber or as journeyman plumber.

Said Board of Examiners, if satisfied that the person so registering was actually engaged in or working at said business prior to said date, shall so certify to the Boards of Health of their respective cities or towns. The Board of Health shall thereupon issue to him a license setting forth that he was engaged in or working at the business, either as a master, or employing plumber, or as a journeyman plumber, as the case may be, prior to the 1st day of June, 1895, and authorizing him to engage in or work at said business, either as a master, or employing plumber, or as a journeyman plumber.

In the case of a firm or corporation, the examining board shall be one of the members of the firm or the manager of the corporation shall satisfy the requirements of this act.

SECTION 3.

There shall be in every city, and in every town of five thousand inhabitants or more, and in every town having a system of water supply or sewerage, a Board of Examiners of Plumbers, who shall serve without compensation, appointed by the Board of Health of said

city or town, consisting of not less than three nor more than five members, one of whom shall be a member of the Board of Health, as said Board may designate; also of not less than one nor more than two master plumbers, and of not less than one nor more than two journeyman plumbers. All the members of said Board of Examiners shall be citizens and residents of the cities or towns in which they are appointed.

SECTION 4.

Said Board of Examiners shall, as soon as may be, after their appointment, meet and organize by the selection of a chairman, and shall designate the times and places for the examination of all applicants desiring to engage in or work at the business of plumbing, within their respective jurisdictions.

Said Board shall examine said applicants as to their practical knowledge of plumbing, house drainage and plumbing ventilation, and shall submit the applicant to some satisfactory form of practical test, and if satisfied of the competency of the applicant, shall so certify to the Board of Health in their respective cities or towns. The Board of Health shall thereupon issue a license to such applicant, authorizing him to engage in or work at the business of plumbing, either as a master or employing plumber, or as a journeyman plumber.

The fee for a license for a master or employing plumber shall be two dollars; for a journeyman plumber it shall be fifty cents.

Said license shall be valid and have force throughout the State, and shall be renewed annually upon payment of a fee of fifty cents.

In case of removal beyond the jurisdiction of the Board of Examiners issuing the original license, it may be renewed by any Board having like authority.

SECTION 5.

The Board of Health of each city or town mentioned in section 3 of this act shall within three months from the passage of this act appoint one or more inspectors of plumbing, who shall be practical plumbers of at least five years' experience, either as a master or as a journeyman, during the years next preceding the date of appointment, and who shall hold office until removed by said Board of Health for cause, which must be shown. All such inspectors shall before appointment be subject to examination by the Examining Board.

The compensation for such inspectors shall be determined by the Board of Health appointing them, and shall be paid from the treasury of their respective cities or towns.

Said inspectors shall inspect all plumbing work for which permits are hereafter granted within their respective jurisdictions in process of construction, alteration or repair, and shall report to said Board of Health all violations of any law, ordinance, by-law, rule or regulation relating to plumbing work, and also perform such other appropriate duties as may be required.

The approval of any plumbing by any other inspectors than those provided for under this act shall not be deemed a compliance with the provisions thereof.

SECTION 6.

No Inspector of Plumbing in any city or town shall inspect or approve any plumbing work done by himself, or any person by whom he is employed, or who is employed by or with him; but in each city or town subject to the provisions of this act, the Board of Health shall appoint an additional Inspector of Plumbing, in the same manner, and subject to the same qualifications as the regular Inspector of Plumbing, whose duty it shall be to inspect, in the manner prescribed in this act, plumbing work done by the regular inspector, or any person by whom he is employed, or who is employed by or with him.

Said additional Inspector shall have authority to act in case of the absence or inability of the regular Inspector, and receive for his services such compensation as the regular Inspector would for a like duty. The provisions of this section shall not apply to any city or town which has heretofore established, or may hereafter establish, an annual salary for the position of Inspector of Plumbing, and in any such city or town no Inspector of Plumbing shall engage in or work at the business of plumbing.

SECTION 7.

In each city or town of 5,000 inhabitants or more in this State, and every town hav-

ing a system of water supply or sewerage, shall by ordinance, or by-law, within six months from the passage of this act, prescribe rules and regulations for the materials, construction, alteration, and inspection of all pipes, tanks, faucets, valves, and other fixtures, by and through which water or sewerage is used and carried; and provide that no such pipes, tanks, faucets, valves, or other fixtures shall be placed in any building in such city or town, except in accordance with plans which shall be approved by the Board of Health of such city or town. Said Board of Health have control of the enforcement of the regulations regarding plumbing; and shall further provide that no plumbing work shall be done, except in the case of repairs of leaks, without a permit being first issued therefor upon such terms and conditions as such cities or towns shall prescribe. But nothing in this section shall prevent Boards of Health from making such rules and regulations in regard to plumbing and house drainage hitherto authorized by law, which are not inconsistent with any ordinance or by-law made under the authority of this section by the respective cities or towns within which such Boards of Health have jurisdiction.

SECTION 8.

Any person violating any provision of this act, or any ordinance, by-law, rule, or regulation made thereunder, shall be deemed guilty of misdemeanor, and be subject to a fine not exceeding fifty dollars for each and every violation thereof, and his license may be revoked by the Board of Health.

Any city or town mentioned in section 3 of this act refusing to comply with any of the provisions of this act shall forfeit the sum of fifty dollars, to the use of the State for every month during which such neglect may continue.

SECTION 9.

The provisions of this act shall apply to all persons who are now, or may be hereafter, learning the business of plumbing when they are sent out to do the work of a journeyman plumber.

Any person now holding an appointment as Inspector of plumbing who shall be eligible to appointment under the provisions of this act, or who at the time of appointment had learned and had worked at the business of plumbing five years as a journeyman, shall be deemed to have been appointed under this act.

SECTION 10.

The said Board of Examiners shall annually, before the 1st day of June, make a full report in detail to their respective Boards of Health of their cities or towns of all their proceedings during the year under this act.

All acts and parts of acts inconsistent herewith are hereby repealed.

Secretary Murray's Report.

Following is the report of Alex. W. Murray, the retiring secretary, read before the Chicago Master Plumbers' Association on the 14th inst :

The association is to be congratulated upon its prosperous condition, having a good balance to its credit, a library containing many valuable books treating upon sanitary subjects, and a complete list of catalogues of the merchandise used by the trade, which is being constantly added to. This is an important feature in the many accommodations of the rooms you have so generously furnished for the comfort of the members.

It had been the constant thought of your officers what would be the best manner of creating an interest in the meetings. The president in his admirable report has suggested some addition. I would recommend that at least 75 minutes of each meeting should be devoted to discussions upon mechanical problems pertaining to the trade. Another suggestion is that you have a quarterly meeting to which members of the craft whom you would consider as desirable members be invited. At such meetings it might be well to have a supper, so as to partake more of the sociable feature than of the plumbing business. Another suggestion is that the Executive Committee make a list of those who are not members, and make an official call upon them. I have many years of experience in association life. I have found many to say, "Why have I not been invited to join the asso-

ciation?" It is my belief that the returns would pay for the extra expense.

In conclusion, let me say that I may have been particular in calling attention to those who were not present in reporting the work of the association, but I simply did my duty as I viewed it. I thank the members and officers for their kind forbearance and universal courtesy extended to me during my 26 months' incumbency of the office, and wish the association a prosperous year.

Master Plumbers and Knights of Tabasco.

Ex-President Jeremiah Sheehan has prepared for publication a letter from which we quote as follows:

In a recent issue of the trade press I noticed an article from the pen of President Mitchell on behalf of the Executive Committee of the National Association of Master Plumbers, deprecating the future attendance at conventions of a certain class of drummers for manufacturers of plumbing material, now better known as the Knights of Tabasco; also, a reply to same from "Old Pepper" Thomas F. Cushing.

Mr. Mitchell's Motives.

In my opinion Mr. Mitchell's suggestions are very pertinent. Those who attended the excursion to St. Clair Springs on the last day of the Detroit convention can testify that the conduct of some of the hilarious knights was a disgrace. I do not claim that they were all knights; it is to be regretted there were a few hilarious plumbers.

The evident intention of the article was to discourage the tendency recently manifest—Hurrah for the convention and a good time, even at the sacrifice of decency. It is a plea for more orderly conventions and gives information to manufacturers as to their so-called duty.

To Whom Addressed.

It is not directed to the body as a whole, but to the few who have given displeasure to the many. It is directed only to those who merit the reproof. If there is any one who feels that the shoe fits, let him wear it.

There are many very genial, gentlemanly and worthy representatives of manufacturers whose attendance at the conventions is an honor to the association and a credit to their employers. These gentlemen have, by their influence, speaking a good word here and there, added much to the strength and efficiency of the National Association, and I hope will so continue to do. I do not think any one of this class feels that Mr. Mitchell's remarks are in any way directed to or affect them.

To me it appears to be directed more particularly to manufacturers, explaining that it was not expected of them that they should send their agents to the conventions, as has been represented by some agents. The manufacturers seemed to be of this opinion, judging from the action of the Central Supply Association, convened at Cleveland, passing a resolution discountenancing such future action.

Contributions from manufacturers and jobbers for the entertainment of delegates should be discouraged and condemned. We are a large prosperous organization and able to bear our own expenses, and if not let us stay at home until we are. The national treasury has of recent years voluntarily offered quite a sum to local associations where conventions have been held, to help defray expenses. If it is necessary

let us double the amount and be independent, as one body of business men should be of another.

THE MASTER PLUMBERS of Scranton, Pa., organized a local association last week and elected the following officers: President, H. J. Gunster; vice-president, Thomas Mullen; secretary, John J. Gorman; treasurer, John J. Howley. James F. Traynor, president of the Master Plumbers' Association of Wilmington, Del., was largely instrumental in getting up the association. He and William Stephens were present at the organization meeting and explained fully the objects of the associations throughout the country.

J. F. JENNINGS & Co., plumbers, are now located at 312 West Main street, Kalamazoo, Mich.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

LEVI McBRIDE, Patterson, N. J., is doing the plumbing and heating in the residences of J. Weiss and A. Hopper. He also has the contract for the plumbing, tinning and copper work for the Eastwood silk mill.

THE COMMISSIONERS of Douglas County, Minn., have awarded the contract for heating, ventilating and plumbing the new Court House to H. Kelly & Co., Minneapolis, Minn.

THE CONTRACT for the metal work and plumbing on the cold storage house of A. C. Hunt & Co., Springfield, Mass., has been let to E. C. Atwater & Co. of that city.

THE NEW CITY HALL at Lansing, Mich., will be heated on the blower system, and bids for the heating will be asked.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until February 14 for the work including roof covering, drainage, &c., for the United States Post Office, Court House and Custom House Building at New Bern, N. C. Drawings and specifications may be had from the Supervising Architect at Washington or from the Superintendent at New Bern.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until February 6 for the low pressure return circulation steam heating and ventilating apparatus for the United States Custom House and Post Office Building at St. Albans, Vt. Drawings and specifications may be had from the Supervising Architect at Washington, or from the Superintendent at St. Albans.

KEHN BROS. & MERTZ, 289 East Kinzie street, Chicago, have the contract for steam heating in the store and flat building of Henry Rieke, Centre and Larabee streets.

M. J. CORBOY, 78 Dearborn street, Chicago, is to do the plumbing, gas fitting and sewerage in the store and office building of J. B. Legnard, River and Dock streets.

Geo. L. Rood, 79 Lake street, Chicago, is to install a Royal hot water heater in the residence of Walter McDonald, Calumet avenue, near Fortieth street.

P. NACEY & Co, 339 Wabash avenue, Chicago, are completing the plumbing, gas fitting and sewerage in the residence of Gen. C. W. Drew, Calumet avenue and Forty-third street.

STEAM AND HOT WATER.

Programme of the American Society of Heating and Ventilating Engineers.

The following is the programme of the first annual meeting of the American Society of Heating and Ventilating Engineers, to be held at 12 West Thirty-first street, New York, commencing Tuesday, January 22, at ten o'clock a.m.:

PROGRAMME.

Meeting to be called to order at 10 o'clock, Tuesday, January 22, 1895, at the hall of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York City.

Order of Business.

1. Roll Call.
2. Reading of Minutes of Previous Meeting.
3. President's Address.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of Chairman of the Board of Managers.
7. Report of Chairman of the Council.
8. Appointment of Nominating Committee.
9. Report of Special Committees.
10. Reading of Papers.

Papers.

- a. "Determining the Heating Power of Heating Systems," by Prof. J. H. Kinealy.—Discussion.
- b. "Heating and Ventilation of School Buildings," by T. J. Waters.—Discussion.
- c. "Testing of Steam Radiators," by Prof. R. C. Carpenter.—Discussion.
- d. "A Short Talk on Hot Water Radiators," by J. J. Wilson.—Discussion.
- e. "A Prison Heating and Ventilating Plant," by H. B. Prather.—Discussion.
- f. "The Literature of Heating and Ventilating," by H. J. Barron.—Discussion.
11. Election of Officers.
12. New Business.
13. Topical Discussion.

Topics for Discussion.

[These questions are allowable for discussion at any point in the programme believed desirable.]

1. In designing a system of heating and ventilation, shall we heat by radiation, and supply only tempered air for ventilation, or shall we heat by the air supplied for ventilation?
2. In a plenum system of heating and ventilation, which is the better for the air ducts, "off and on" hot and tempered air dampers, or "mixer" dampers?
3. The average amount of water condensed per 100 square feet heating surface per hour, in the different manners in which heating coils and radiators are erected.
4. The necessary size of risers for a given amount of heating surface, for the different sizes of pipes and coils,

and for different classes and sizes of radiators.

5. The necessary size of horizontal mains for a given amount of heating surface, for the different size of pipes and coils, and for the different classes and sizes of radiators.

6. The probable future of electrical heating.

7. Necessity of automatic air and water valves on steam systems.

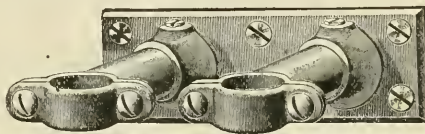
8. Where a propulsion fan is used for heating and ventilating a theater, is an exhaust or aspirating fan necessary?

9. What should we accept as the minimum standard of ventilation for various buildings, and what is the best means to employ to obtain this result?

This meeting promises to be a very important one, and it is hoped that the attendance will be large.

The Columbia Pipe Hanger.

We show in the accompanying illustration one form of the Columbia pipe hanger made by the J. W. Chamberlain Company, Bangor, Maine. The hanger is made single, double, triple and quadruple, and in all sizes, from $\frac{3}{4}$ to $1\frac{1}{2}$ inches, and finished as plain, galvanized, polished brass or nickel plated. The particular merit claimed for this form of hanger is that it does away with clamping the pipes close to the walls or ceilings, permitting the



Columbia Pipe Hanger.

10. Current systems of air delivery in simple indirect and fan system plants *vs.* plenum chamber system.

11. The consulting engineer and a common specification *vs.* "free for all" competition for contracts for heating and ventilating plants.

12. Value of standing committees of the society on test standards.

13. What is the proper proportion for cold air inlets to hot air furnaces?

14. Efficiency of extended surface in steam and water radiators.

15. The merits, if any, of vertical over horizontal circulation in hot water heaters.

16. Joints in sectional steam and hot water heaters, considering them as we find them in ordinary construction, such as gasket joints, screw joints, and push nipple joints.

17. The advantage possessed by metal over wooden cold air conduit.

18. Wrought iron pipe compared with steel pipe.

19. Compensation for plans and specifications.

20. Are mushroom registers under auditorium seats advisable or are all floor entrances for warm air objectionable?

21. In designing a hot water system shall we assume a cooling in the radiators of 15, 20, 25 or 30 degrees?

The council may change this programme as they think desirable during the progress of the evening.

Meetings will probably be held during the morning and afternoon of each day, and it is expected that the convention will last about three days. During the interim between sessions members will be invited to inspect the heating and ventilation of some of the more important plants in and around New York.

The location of the hall at which the meetings will be held is in the center of the hotel district.

pipes to be hung from 1 to 4 inches from the wall, and can furthermore be taken down or adjusted to grade after the pipes are in place. It is pointed out that with the Columbia hanger pipes can be put up with a correct grade, regardless of the unevenness of ceilings.

The Heating of Greenhouses by Gas.

The following paper by William R. Chester was read before the Manchester District Institution of Gas Engineers in England:

Probably many of the members of this institution will, at some time or other, have had their attention turned to the possibility of heating small or moderate sized greenhouses with coal gas, and some of them will probably have carried out schemes for accomplishing this purpose. The great difficulty, however, in the way of a more extended application of the system is the cost of gas as fuel, which if burned continuously at even a small rate per hour throughout the day and night soon runs up the cost to considerable figures. In spite of this drawback, however, I am inclined to think that, when all things are properly taken into consideration, it will bear a favorable comparison with any other system of heating; and if an automatic arrangement be applied to the gas supply, to increase or diminish the consumption in exact accordance with atmospheric variations of temperature, it will be found that gas is both cheaper and better adapted than any other form of fuel for greenhouse purposes—at any rate, in all those cases where a moderate temperature only of (say) 50° to 60° is required.

If we take a moderate sized conservatory of the lean-to type, 20 feet long, 12 feet wide, and 10 feet high at the top, sloping to 6 feet at the eaves, we shall

have a superficial area of glass amounting to about 440 square feet. Each square foot of glass surface is capable of cooling $1\frac{1}{2}$ cubic feet per minute of heated air in the interior of the conservatory to the temperature of the atmosphere outside; so that with a glass surface of 440 feet superficial, 550 cubic feet of air will be lowered to atmospheric temperature per minute. In order to maintain a constant temperature in the conservatory it will, therefore, be necessary to provide so much heat per minute as will raise the temperature of 550 cubic feet of air the number of degrees which is the difference between the interior and exterior temperatures of the air—say, about 30° F. The normal interior winter temperature required is about 50° F.; the exterior temperature seldom going lower than 20° F., or 12° of frost. Of course, the atmospheric temperature often gets lower than 12° of frost; but not in sheltered places, such as those in which conservatories are usually built.

Now 550 cubic feet of air represents about 45 pounds in weight; and the specific heat of air being 0.2375 as compared with water, we shall require to develop as much heat as will raise the temperature of 10.6 pounds of water 30° F. per minute, which is 318 B.T.U., or 19,080 units of heat per hour.

In a specially constructed boiler made to utilize, say, 80 per cent. of the total heat developed from the combustion of coal gas, we should be able to do this work with a consumption of 30 cubic feet of gas per hour, or 720 feet per day, which would cost, at 2 shillings 6 pence (62 cents) per 1000 cubic feet, (say) 1 shilling $\frac{1}{2}$ pence (44 cents). This consumption is based on the rather extreme supposition that the low temperature of 12° of frost would continue throughout the 24 hours; but as this is a rare occurrence, we may take it that the comparison is as unfavorable to gas as it is possible to make it. If during the daylight the atmospheric temperature should rise, the automatic regulator would come into operation and at once reduce the consumption of gas and proportionately diminish the cost. It would not, therefore, be unfair to take the cost of gas at 1 shilling 6 pence (37 cents) per day as an average. On the other hand, if a conservatory of similar size were heated by coal or coke burnt in an ordinary saddle boiler, such as is customarily used for the purpose, it would require from $1\frac{1}{2}$ to 2 hundred-weight per 24 hours, which, at (say) 8 pence (16 cents) per hundredweight delivered, would cost from 1 shilling to 1 shilling 4 pence (25 to 33 cents) per day. Add to this the wages of an attendant to fire up and clear away the ashes (say) two hours per day, at 5 pence (10 cents) per hour, the cost would be 1 shilling 10 pence to 2 shillings 2 pence (45 to 54 cents) per day. If the greenhouse be heated by hot air flues instead of by water pipes, the consumption of coal or coke would be still greater.

Extremes of temperature are always detrimental; and where solid fuel is used it is next to impossible to maintain that regularity in small greenhouses which is so essential. On this point alone the use of gas for heating purposes possesses an immense advantage. With solid fuel firing, the furnace is filled up at periods of the day or night, and as it burns through there is an excess of heat developed, which raises the temperature of the house too high. Then as the fire burns down, it is allowed to fall too low, and unfortunately sometimes, at critical periods,

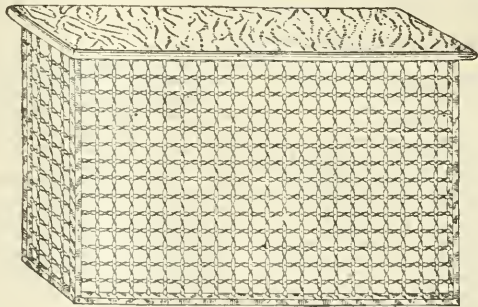
the fire has a way of burning out from want of attention, and thus producing perfectly disastrous results. With the gaseous fired boiler specially constructed for the purpose, this variation can never occur, and it may be depended on to maintain the temperature required with perfect regularity.

This specially constructed boiler, capable of maintaining the above high ideals, has yet to be made; for though I have experimented with many types, as at present manufactured, there are none which yet come up to the mark, and some of them fell very far short of it. The boiler must be constructed with a studded bottom and interior tubes with gills or studs on the inside for rapidly absorbing the heat and transmitting it to the water. It must be of such length as to absorb all the heat developed by the combustion of the gas except just the amount necessary to insure a continuous upward current; and it must be boxed in round the burner so as to admit no more air than is just sufficient for the complete combustion of the gas. At the top it must be provided with a cover and flue pipe, for carrying away the products of combustion. The flow and return openings must be not less than the water pipes to be heated—say, 3 inches in interior diameter; and the burner must be constructed to consume the maximum and minimum quantities of gas with perfect combustion. It must not fire back under any conditions; and when not required it must automatically shut off

structured of sheet copper, 15 inches in diameter and 2 feet high, with 1-inch vertical copper tubes, capped at the top, and fitted with a flue pipe for carrying off the products of combustion. The burner (atmospheric) is boxed in at the bottom, and perforations are made for the admission of the necessary quantity of air to insure complete combustion. The burner is of the ring type, with separate taps. The boiler is placed in a second conservatory, which it heats by radiation; and the flow and return pipes have to pass outside a distance of 25 feet before they enter the large building, so that the conditions are entirely against obtaining favorable results. With a consumption of 60 cubic feet of gas per hour, the temperature of the large building was maintained at 66° with an outside temperature of 46° . The temperature of the flow and return pipes (which, by the way, are reduced to 1 inch diameter at the boiler) are as follows: Flow, 132° F.; return, 87° F. The effluent gases leaving the boiler were at 380° F., and their analyses (average of series of tests) were as follows:

	Per cent.
Carbonic acid.....	60
Oxygen.....	8.6
Nitrogen.....	85.4
Total.....	100.0

From these results the following defects are apparent: 1. The heating surface is deficient, the effluent gases being allowed to escape at too high a temperature. 2. Too large a proportion of



Radiator Screen.

all the gas except the supply to a small pilot jet, which will at once reignite the gas at the burner when further heat is required. The consumption of gas must be controlled by the temperature of the conservatory, and automatically increased or diminished within fixed limits, which may easily be determined. When we have such a boiler—and there are no inherent difficulties in its construction—we shall, I am confident, have a wide field for the further development of coal gas for conservatory heating; and my principal object in writing this paper is to direct the attention of makers into this particular groove. It will be a profitable one both for them and for the gas producer.

Having outlined the possibilities which are to be attained in this direction, I will now give briefly the results obtained from an arrangement I have recently fitted up at Bestwood Lodge for the Duke of St. Albans. The conservatory is 41 feet 6 inches long, 26 feet wide, and 24 feet high from floor to apex of roof. The glass surface is 1965 square feet, and the cubical capacity is 19,162 cubic feet. The heating pipes are 3 inches in diameter; having a surface area of 431 square feet. The pipes were already in. The boiler is con-

air is permitted to enter with the gas. 3. The flow and return pipes at the boiler are much too small. 4. The radiating pipes are much too large for the boiler—i. e., a much larger boiler is necessary for effective work.

I ought to mention that the whole application has been carried out as an experiment, with a view of determining the more correct proportions to adopt in the permanent installation, and to find out, on a practical working scale, how far it is possible to utilize coal gas for such a purpose with due regard to economy. On some future occasion I may have further information on the subject, which will probably be of a wider general interest to the gas industry.

Radiator Screen.

An ornamental screen for use over radiators is being introduced by E. T. Barnum, Detroit, Mich., as shown herewith. The screens are generally made of twisted, quarter twisted or crimped brass, polished steel, bronze or copper, and of any size mesh and finish, or of other material if preferred. They are referred to as concealing the pipes or coils and as an improvement to the gen-

oral appearance of any room. The top may be of polished marble, as illustrated, or it may be of the same material, as the sides, shaped oval, square or as desired.

HEATING NOTES.

LOCKWOOD & ADAMS, 69 Centre street, will represent in New York this year the Holland Radiator & Mfg. Company. The new firm propose to make a push on their line of radiators, which is to have some new additions. D. A. Crowley will continue to travel in the interest of the Holland radiators from the New York house.

THE AUTOMATIC HEATING COMPANY have been organized at Portland, Me., for the purpose of manufacturing machines and apparatus for the Ware Automatic Generator and Regulator. President, A. J. Hodder of Boston; treasurer, Leonard Shackford of Cambridge.

THE STEAM HEATING ESTABLISHMENT of Alger Leonard, Great Barrington, Mass., was visited by fire last week doing slight damage.

JOHN A. SCOLLAY, 74 Myrtle avenue, Brooklyn, N. Y., is issuing a new circular, printed in two colors, of his patent hot water thermometer. The different styles of thermometers are shown by illustrations. The features are a black fluid which can be readily seen at a distance and the ease with which the thermometer can be attached. A stationary cup is arranged to screw into a hole threaded for $\frac{1}{4}$ -inch pipe. The thermometer is then set in the cup.

L. R. BLACKMORE, 88 John street, New York, on December 25, 1894, was granted a patent for a house heating boiler, to be used as a hot water apparatus or as a steam generator, for which it is said to have special advantages. It is of the vertical, sectional type, with provision for internal circulation and arranged to permit steam globules to rise to the steam chamber unhindered by the heating surfaces, so that, it is claimed, no difficulty will be experienced in maintaining a regular and steady water line. The feature of the boiler is the large surface exposed to the direct heat of the fire, which is accomplished by the arrangement and construction of the waterways. The boiler is provided with a device for heating air for admission to the combustion chamber to aid in consuming the gases and to prevent trouble from soot when soft coal is used. It is provided with a direct draft damper which, when closed, causes the products of combustion to make a downward turn and pass to the back of the boiler before escaping. The flues are so arranged that the draft affects all parts of the grate alike.

THE SPERL HEATER COMPANY, Carbonade, Pa., have completed the equipment of their shop, and are now moving into it. The new plant consists of a machine and erecting shop and a boiler house, but there is ground enough upon which to build a foundry if it is deemed advisable to do so in the future. The boiler house is 32 feet long and 24 feet wide, and contains a horizontal return tubular boiler 48 inches in diameter and 14 feet long, rated at 50 horse-power. The machine and erecting shop is a two-story brick building 40 feet wide and 60 feet long, built on the plan of slow burning mill construction, fitted up with an overhead traveling crane covering its full length on one side. There is a tool

and supply room in one corner downstairs and a temporary office upstairs. There are all needed toilet facilities and sanitary appliances. In the way of machine tools the shop is well equipped.

C. H. BARNES, who represents the American Boiler Company in Colorado, with headquarters at Denver, has been spending a few days at the Chicago office.

LORD & BURNHAM COMPANY, manufacturers of greenhouses and greenhouse heating apparatus, have transferred their architectural department from Irvington, N. Y., and in future all preliminary plans, estimating and negotiating will be done from their office at 160 Fifth avenue, corner Twenty-first street, New York.

THE JOHN DAVIS COMPANY, 69-79 Michigan street, Chicago, are doing the steam heating in the New Music Temple, Van Buren street, between Michigan and Wabash avenues.

KROESCHEL Bros. Company, 41-59 Erie street, Chicago, are to install a steam heating plant in the Fort Dearborn 12-story office building, Clark and Monroe streets.

THE FOLLOWING are the recent additions made to the selling force of the J. H. McLain Company, Canton, Ohio: E. A. Peacock at the Chicago office of the company, 88 Lake street; J. A. Farrell, who will travel from the Chicago office through Iowa, Illinois and Missouri. From the Canton office W. M. Kingsbury will travel in Northern Ohio, Northern Indiana and Michigan, and W. J. Blackmore will travel in Southern Ohio, Western Pennsylvania and West Virginia. J. B. Crowl, formerly with May & Fieberger of Akron will travel from the Canton office in Ohio and Michigan in the interests of their Oxford furnace only. J. H. Coleman, Jr., with headquarters at the New York office, will travel through the New England States, while George W. Plastow, heating engineer, formerly with Johnson & Morris of New York, will visit the city and suburban trade from the New York office.

THE SPECIALTY MFG. COMPANY of Waterbury, Conn., issue circulars calling attention to the Waterbury heat regulator, adapted for use in connection with hot air furnaces and steam and hot water apparatus. A number of testimonial letters, which occupy a large part of the circular, give an idea of the favor with which the device has been received at the hands of the trade.

Isaac A. Sheppard & Co.'s Exhibit.

Isaac A. Sheppard & Co., Philadelphia, have just completed an exhibit in the Builders' Exchange Permanent Exhibition in that city which is the largest to be found in the exhibition. It is situated in the northwest corner of the spacious exhibition hall, inclosed within a handsome gilt work screen, having an arched entrance, and occupies an area of about 300 square feet. A neat sign, surmounted by a model of a Paragon furnace, attracts attention upon entering. The center of the floor is devoted largely to the firm's well known Paragon steel drum furnaces. Six styles are shown, with and without casings, so that both interiors and exteriors may be readily seen and examined. Paragon furnaces are so constructed that the

draft in their two combustion chambers is equal, thus making equal radiating surfaces. This equal distribution of heat is said to add to the endurance of the furnaces. The self cleaning arrangement of the drums and the large radiating surfaces are conspicuous in the interiors; and the small number of joints to be found is evidence of the gas and dust proof qualities possessed by the furnaces. The ball bearing frictionless grate is also an interesting feature. The later productions in the Paragon line will be supplied with either frictionless draw center or triplex grates, as may be desired. A No. 440 Paragon with cast radiator represents a line which the firm will shortly furnish in four sizes. A corner of the inclosure is occupied by a brick set paragon furnace with cast iron front. "Because a furnace is located in a cellar or basement is no reason why it should be ugly," was once remarked by a member of the firm; but the very handsome Renaissance design of front shown in this furnace would certainly make one wish that a better location could be accorded it. The upper panel of the front is removable, to allow of access to the drum. The front extends above the top of the radiator, so that the whole furnace may be withdrawn for repairs or other purpose without disturbing the brick work. The paragon line will shortly be augmented by the addition of a combined hot air and hot water heating furnace, to be made in three sizes. Other furnaces shown are the Saxon and Excelsior, as representatives of cheaper lines of effective furnaces; and the Fidelity, a first-class furnace, having a heating capacity somewhat less than the Paragon, and made in three sizes.

Arranged along the outer sides of the square are the ranges. A No. 88 Excelsior with double oven represents the firm's well known Excelsior line of ranges, of which there are nearly 100,000 in daily use in Philadelphia and vicinity. In these ranges the excellent flue construction is a leading feature. A Royal Fidelity No. 88 with horizontal boiler is shown as a specimen of another line of first-class ranges. A feature in this range is a cast iron shield of ornate design, used in connection with a cast iron mantel to cover the boiler and thus shield the operator from the boiler radiation. Another range of the same line is shown in connection with an ordinary upright boiler. Both ranges have hot air attachments for heating upper rooms. The Fidelity line of ranges is represented by two styles, a No. 80 with the regular horizontal boiler and a No. 7 without a boiler. The latter has a gas stove attachment to the plate warmer, designed for use in summer, instead of a separate gas stove. The attachment is especially applicable for use in flats and other places where economy in kitchen space is desirable. The Fidelity ranges have the same flue construction as the Excelsior.

A No. 6 Franklin fire place heater is shown as a sample of a line consisting of two sizes, with or without magazines, and with round or square fronts in nickel or Berlin black finishes.

While the exhibit does not cover the whole of the firm's products, it may be said to represent the lines most closely allied to the building trades.

New canning factories to the number of 102 were established in the Southern States last year, according to the *Tradesman*.

THE RETAIL STORE.

Poetry in Trade.

From a well known jobbing house in Tennessee we have the following communication, which explains itself:

As an illustration of the fact that it is no use for the Hardware dealer to try to "beat" the school teacher in a war of words, we give a letter received to day from one of our customers, a teacher, who had bought a Gun of us some time since. We wrote him that, "owing to our impetuosity we would like to have a little reciprocity" in the shape of a check by return mail for the amount of his account. But he completely knocked us out with the following response:

With considerable curiosity,
And accelerating velocity,
I perused the gentle verbosity
Of your dun without animosity.

With sorrowful hesitation,
I make the declaration,
That my financial situation
Prevents a prompt liquidation.

With the humblest timidity
In the midst of sore turgidity,
I ask you to relinquish rigidity
And trust to my eager rapidity.

With candid and earnest and feeling
sincerity,
I promise to use my utmost celerity.

Yours in adversity;
Not in perversity.

Steam Sterilizer.

The accompanying cuts represent a steam sterilizer offered by Silver & Co., 304-314 Hewes street, Brooklyn, with New York office 20 Warren street.



Fig. 1.—Steamer.

Into the bottles shown in Fig 2 is placed the proper quantity of milk, to which is added the proper quantity of barley, or oatmeal or gruel, or fresh water, to which is added sugar. The proportions to be used are indicated upon a food table accompanying the sterilizer. The bottles are then placed in the tray, Fig. 2, using the rubber bottle stoppers. The tray, with the bottles, is then placed in the steamer, together with water, the lid put on

the steamer and the water allowed to boil vigorously over a fire for three quarters of an hour. The cup shown in Fig. 3 is provided with folding handles and a perforated false bottom,



Fig. 2.—Tray and Bottles.

and is for warming the sterilized milk for feeding. A funnel and bottle cleaner are furnished with the set, as in



Fig. 3.—Milk Warming Cup.

Fig. 4. The set, complete, is packed in a wooden case with a hinged cover, occupying a space 14 inches high and 9 inches square. The set includes a



Fig. 4.—Funnel and Bottle Cleaner.

steamer with quick boiling corrugated copper bottom, a bottle tray, seven graduated glass bottles, seven ventilated rubber corks with glass plugs, warming cup, funnel and bottle brush.

Gasoline Goods.

This is the season when the dealers of gasoline cooking apparatus are beginning to purchase, and the new goods are making their appearance. The enormous trade now done in this line is a satisfactory vindication of those who met with almost insurmountable obstacles in the introduction. Insurance is no longer a bigbear, as there are many

companies broad enough to see that the element of danger, which was exaggerated for a purpose, has been almost eliminated by improved construction and familiarity that has come by using the fluid. The comfort and convenience have led to the use of gasoline cooking stoves all the year round in many households, some other means than the cooking apparatus being depended on in winter to supply heat. While what is known as the New Process stove has come rapidly into popularity and supplies a large part of the demand, the generating burner still has a large following in the colder sections of the country where evaporation is hindered by the low temperature in the winter season. The goods of to-day are far simpler than those first introduced and do not require as much attention or repairs. For cooking, where artificial gas cannot be secured from a gas plant, gasoline is destined to grow in favor and stay in the field. The only care needed is such as a careful housewife would give any apparatus. It must also be borne in mind that the fluid is very volatile, and a leak in the can or reservoir may lead to disastrous consequences if a flame is brought in contact with the gas. Dealers now thoroughly understand the necessity of care in this matter, and explain it to buyers, so that it is only through the utmost negligence that an accident can happen.

Dietz Crystal Lantern.

R. E. Dietz & Co., 60 Laight street, New York, have brought out the Dietz New Crystal Tubular Lantern, with

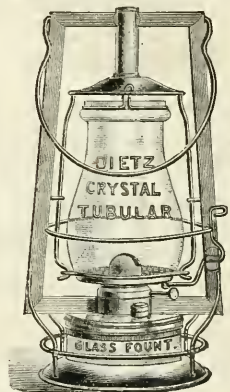


Fig. 1.—Dietz Crystal Lantern.

removable glass fount, as shown in the accompanying cuts. It is referred to as strongly made, and special attention is drawn to the transparent glass fount, which is adequately guarded. In case of an accident to the fount, a new one can be as easily substituted as a globe. Fig. 1 represents the lantern in normal condition. Fig. 2 shows the side wires supporting the bottom and holding the

fount in position, detached so that the fount can be removed or replaced. Fig. 3 indicates the method of raising the

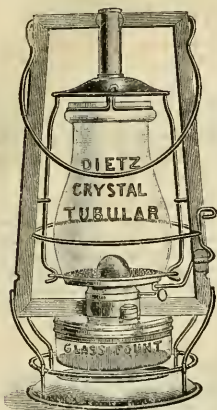


Fig. 2.—Bottom Wires Detached.

globe for the purpose of trimming or lighting the wick. The lantern is 14

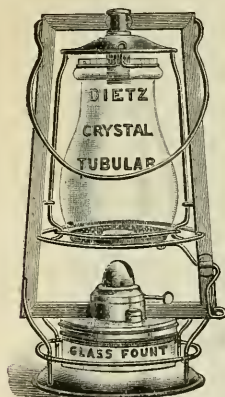


Fig. 3.—Side Lift for Raising Globe.

inches high, takes a No. 1 burner, $\frac{3}{4}$ -inch wick and No. 0 globe.

MEMORANDA.

E. A. BLANCHARD of Springfield, Maine, and E. W. BRADDEEN of Old Town, Maine, have purchased the stove, tinware and plumbing business of Daniel Sawyer, and will take possession April 1. Mr. Blanchard has been in the same business in Springfield, and Mr. Bradeen has been connected with Mr. Sawyer's establishment.

W. A. GUENTHER & SONS, Owensboro, Ky., have adopted a rather unusual as well as a novel form of circular, calling the attention of retail customers to their stock of Hardware, Stoves, Mantels, Grates, &c. The circular is a strip of paper 2 inches wide and 2 yards long, rolled on a wooden pool. Different lines of goods are treated under numbered headings, of which there are 17. Attention is also called to a plan of guessing, by which a \$60 steel range is given to the successful cash customer.

Showcase Refrigerators.

Among the refrigerators put on the market for the coming season by the Challenge Corn Planter Company, Grand Haven, Mich., for whom Barnard B. Neal, 106 Chambers street, New

allowing the display of cut meats, fresh and juicy, in plain view of customers and yet protected from heat, dust and flies. The refrigerator shown in Fig. 2 has glass on three sides, while the panels around the ice chamber are of beveled plate mirrors. The ice door is

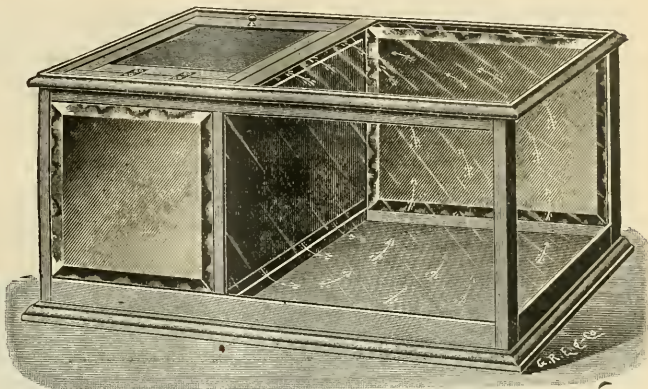


Fig. 1.—Showcase Refrigerator.

York, is agent, are the two shown in the accompanying cuts. The refrigerator shown in Fig. 1 is referred to as being neat in appearance and as filling

on the back of the case. It is remarked that the case is made of kiln dried ash, filled and finished in antique with shellac and coach varnish, and that the case

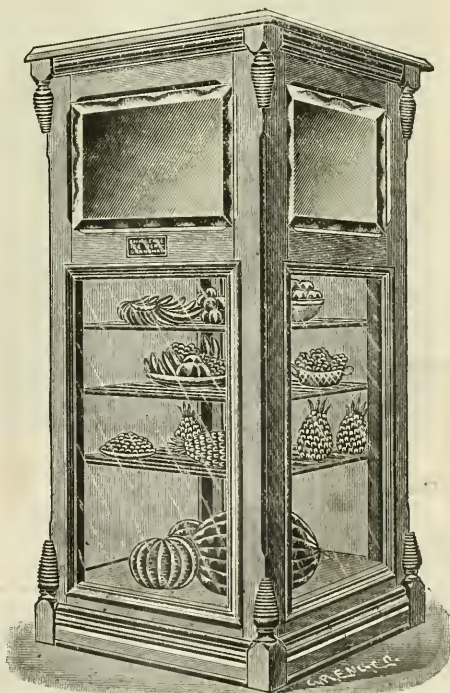


Fig. 2.—Refrigerator for Restaurants, Grocers, &c.

the requirements of a refrigerator and a showcase in which there is a perfect circulation of cold air. It is particularly designed for the use of butchers,

is provided with the company's new air tight lock. This refrigerator is designed for the use of restaurants, grocers or florists.

ROOFING AND CORNICE.

Ceiling Panel Plate with Enriched Center.

The accompanying illustration shows a piece of very handsome sheet metal work, the product of the Penn Iron Roofing & Corrugating Company, Limited, Philadelphia. The illustration is of the German Renaissance pattern of ceiling panel plate, and the design is accurately reproduced in the engraving, which brings out clearly its many attractive features. The plates cover 31½ inches square of space after making the

it is stated that it takes 34 inches square of flat material under a pressure of 650 tons, by several operations, to bring the plate up to its finished form with a 1½-inch depth of molding. The firm, we understand, have been experimenting over five years in perfecting this operation.

FLASHINGS.

T. C. McDONALD ROOF PAINT COMPANY have opened an office at Savannah, Ga., and will manufacture there

advise us that the tin plates used are full weight and that they do not handle light plates or wasters. They also call attention to the reduced price of tin, which enables them to sell their product at low figures.

ACCORDING to a recent issue of the *Bethlehem Times* the Slatington-Bangor Slate Syndicate of Slatington, Pa., enjoyed an exceedingly gratifying demand for their specialties during the year just brought to a close. It is stated that they sold and shipped more



Ceiling Panel Plate with Enriched Center.

dovetail lock joint lap, which is dust-proof and requires no extra work in putting and closing. It also forms a separate finished center in itself when desired and when applied wholly as a ceiling in combination with the enriched coves, borders, moldings, &c., of the same manufacturers. The plate is made without the enriched center or with complete centers of any styles. The plates can be worked in combination with the art steel ceiling plates of this firm, and can be so arranged as to combine with beam or drop girder designs and rich corner blocks in the combination, when so desired. A great deal of time has been spent in the preparation of this new plate, which is stamped from a solid sheet of steel. The pressure needed to make its form will be understood when

the McDonald roof coating paint and roofing cement, of which they are the sole proprietors.

E. C. ATWATER & Co., Springfield, Mass., have been awarded the contract for the cornice, gutters and ventilators and also for the tin covering of the Highland Brewery, at Springfield.

THE CORTRIGHT METAL ROOFING COMPANY, Philadelphia, with Chicago office at 134 Van Buren street, manufacture an extensive line of roofing materials, including metal slates, Victoria shingles and trimmings for ridges, hips, valleys, &c. These goods are made of tin plate, galvanized steel or copper, as may be desired, and are highly spoken of for their ornamental appearance as well as for their efficiency. The manufacturers

than 1300 cars of roofing slate, aggregating 57,000 squares, and more than 180,000 square feet of slate blackboards, this being nearly double the quantity sold in 1893. The syndicate made shipments from more than 40 different quarries during the year, sending the product into nearly every State and Territory, as well as Canada and Mexico. The success which the company have achieved is due in no small degree to the business enterprise and sagacity of Manager James L. Foote, who reports that the outlook for the present year is very flattering. He is of the opinion that the demand for slate will exceed that of any previous year and that better prices will prevail. It is stated that the company have already booked orders for spring shipment for

more than 7000 squares, and it is the expectation to market fully 100,000 squares of roofing slate before the end of the year. The leading brands are the "American Bangor," "Pennsylvania Queen," "Old Reliable Big Bed" and "Star Union."

BUYERS of eave troughs will be interested in the revised list printed in our Trade Report this week giving the prices adopted at the first regular meeting of the United States Eave Trough and Conductor Pipe Association, held at Cincinnati, January 9.

top of the large card used, while to the lower part are attached leaves for the several months as well as a full card calendar for the year. Casual attention is called to their Perfection steel roofing, Gilbertson's Old Method roofing tin, and general roofing and tinsmiths' supplies.

A Specimen of Fine Copper Work.

Schaeffer Bros. of Chicago have recently made and put in position the



A Specimen of Fine Copper Work.

EBERTS BROTHERS COMPANY, Limited, Detroit, Mich., favor us with a calendar for the current year. The decoration of the publication, which is a prominent feature of it, is a winter landscape, replete with snow and ice. The background and available spaces are filled with references to the business of Messrs. Eberts, telling what they deal in and what work they do.

FRANK VOIGHTMANN, 129 131 Franklin street, Chicago, is doing the copper and galvanized iron work, slate and tile roofing on the Court House at Fort Worth, Texas.

THE ILLINOIS ROOFING AND SUPPLY COMPANY, 203 Lake street, Chicago, have issued a finely illustrated wall calendar. A spirited engraving adorns the

copper cornice work, metallic roofing, bay windows, light courts and skylight work on the handsome and unique Viking Block, corner of North and Washenaw avenues, Chicago. F. Knudsen is the architect and O. A. Knudsen the owner of the building, which is 132 x 51 feet, four stories high. A great deal of copper work was required for the ornamental cornice and for the bay windows. Two banks of bay windows project from the side. The design of the building being of a decidedly ornamental character, it was necessary that the copper work should correspond. The block is surmounted by four towers, giving the top an appropriate finish. These towers are also covered with copper. The main tower is on the corner of the

building at the junction of the two avenues, and is built considerably higher than the others. At its apex, 109 feet above the street level, is placed a large model of the Viking ship of World's Fair renown, made of 14-ounce copper. An illustration of this ship is herewith given.

Charles Schaeffer, 928 North Tallman avenue, Chicago, who designed and constructed this handsome piece of work, has furnished us with the following details of its dimensions, &c.: The length of the hull is 4 feet; depth, 11 inches; width, 13 inches; height, from keel to pennant, 5 feet. The globe shown underneath the ship is 15 inches in diameter. The ship revolves on glass bearings, which are placed part way up in the mast on the upper end of a 1½-inch iron rod that extends down into the cupola. On these bearings the ship revolves, responding to the slightest change in the direction of even the lightest breeze. The hull is made so as to withstand the pressure of very heavy winds. It is strongly braced, and is extremely rigid in every particular. The ropes, which are made of wire, are ½ inch thick. Owing to the fact that the ship has no deck, the bottom of the keel is perforated at intervals along its length with ½ inch holes to allow water to escape. The planks of the hull, the seams in the sail, and the figure at the prow with the finial at the stern are all skillfully reproduced in the beaten copper. The excellent character of the work has attracted much attention, as the elevated position of the ship enables it to be seen for a great distance in every direction, and the observers approach it to get a better view.

A movement is on foot in Philadelphia to secure for the School of Industrial Art of the Pennsylvania Museum the balance of the fund left to the city in trust by Benjamin Franklin for the benefit of poor artisans. Petitions are being circulated for this purpose, setting forth the claims of the school and its advantages to the artisans and textile workers of Philadelphia. It is argued that as the apprentice system is now defunct in the city there is no object to which the fund could be diverted which is more in line with the distinguished testator's intentions.

An electrical expert, quoted in a New York journal, puts out the following, danger signal; "I have a word of advice to give people who carry steel rod umbrellas these wet days. They must keep a sharp lookout for arc lights while pushing their steel rods through the air. Of course this only applies when the current is on, and when it is, if the umbrella rod comes in contact with the lamp, there is a strong probability that the holder will be very badly shocked, if not seriously injured."

The annual summary of shipping arrivals in the port of New York during the past year, compiled at the Barge Office, shows that 4761 vessels arrived from foreign ports in that period. Of this number, 2984 were steamships. England heads the list with a total of 2383 vessels, the United States coming next with 1125. Germany and Norway take the third and fourth places. Vessels of other nationalities coming to this port were as follows: Holland, 152; France, 96; Italy, 92; Belgium, 77; Spain, 59; Denmark, 34; Portugal, 24; Sweden, 8; Russia, 6; Austria, 6; Hayti, 4; Hawaii, 3; Brazil, 2.

TIN PLATES.

The Tin Plate Wages Dispute.

On Monday, the 14th inst., a meeting was held in the Monongahela House, Pittsburgh, attended by a number of tin plate manufacturers and representatives of the Amalgamated Association. The firms represented in person at the meeting were New Castle Steel & Tin Plate Company, New Castle, Pa.; the Cumberland Steel & Tin Plate Company, Cumberland, Md.; Falcon Tin Plate & Sheet Company, Niles, Ohio, and Etna-Standard Steel & Iron Company, Bridgeport, Ohio. The meeting was called at the suggestion of several tin plate manufacturers who were desirous, if possible, of ending the long struggle between the tin plate manufacturers and the workmen which was inaugurated some four months ago. The conference convened about 2 p.m. on Monday, and after long arguments from both sides, in support of their respective positions, the meeting adjourned without anything definite having been accomplished.

On Tuesday, however, another conference was held between representatives of the Cumberland Steel & Tin Plate Company and officials of the Amalgamated Association, and a settlement was reached. It will be remembered that the original demands of the tin plate manufacturers were for a reduction of 30 per cent. in rollers' wages and 25 per cent. for doublers and heaters. At the above conferences the Amalgamated Association agreed to allow a reduction of 15 per cent. in wages for rollers, and 12½ per cent. in wages of doublers and heaters. Under the old scale wages were based on gauges 29 and 30, rollers being paid \$5.30 per ton of 2240 pounds, doublers \$3.70, heaters \$2.48 and shearmen \$1.76. Under the new scale rollers will be paid \$4.50 per ton, doublers \$2.36, heaters \$2.17 and shearmen \$1.54.

For heavier gauges than 29 and 30 the reduction is smaller. On Nos. 27 and 28 rollers will be paid 12½ per cent. instead of 15 per cent., and doublers, heaters and shearmen 10 per cent., instead of 12½ per cent.

At the conclusion of the conference the Cumberland Steel & Tin Plate Company signed the Amalgamated Association scale, and later the New Castle Steel & Tin Plate Company, New Castle, Pa., also signed. Those concerns who operated their plants right along under the old Amalgamated Association scale will immediately be allowed

the concessions just granted by the Amalgamated Association. As to what effect this will have on those plants that are now idle cannot be stated. It is the impression, however, that additional concerns will sign the scale within a short time. The above conferences were held independent of the Tinned Plate Manufacturers' Association, and the presumption is that the firms who have signed the compromise scale will no longer be members of the above organization.

British Tin Plates in 1894.

Griffith's Annual Review of the iron, steel and allied industries in Great Britain for the year 1894 summarizes the condition of the Welsh tin plate industry as follows:

Most of the works in South Wales and Monmouthshire have been halting between stopping and starting throughout the year. Common coke plates were in January sold at 10 shillings 6 pence a box in Liverpool, and penny by penny the price has gradually been pushed down to 9 shillings 6 pence. In October the American tariff was reduced to 1½ cents per pound, and this was accompanied by an immediate increase in shipments to the States, but though the returns for the months since the duty was reduced are much above the average for the year, they are not what was looked for after such long-continued short shipments. In our opinion, as yet, the American manufacturers of tin plates do not know either the weakness or the strength of their position under the Wilson tariff, and equally, we think, the Welsh manufacturers do not know their own hand. The collapse of business in the States in the earlier months of the year threw everything out of gear. On one hand it favored 'domestic' manufacturers by reducing costs; on the other, for a time, it paralyzed the power of the nation to digest (or consume) its own or any other people's manufactures. After the new tariff took effect, the whole of the American works were laid off by labor troubles; now they have resumed with non-union labor; and we shall soon be able to judge where the balance of power lies—i. e., whether or not the 1½ cents per pound duty is sufficient to turn the scale in favor of America. It has always been our opinion that cheap labor was not sufficiently plentiful in the States to enable tin plates to be made there so economically as in South Wales, and therefore we hold, on economic grounds, that South Wales, and not America, is the place to make these things. If the whole process can be carried out mechanically with satisfactory results, then, duty or no duty, South Wales would at once lose her hold on the American market. The course of events in the tin plate trade this year will be watched on both sides of the Atlantic with peculiar interest.

SCRAP.

Two existing tin plate manufacturing companies are said to be contemplating the removal of their plants to Burgettstown, Washington County, Pa.

THE COMPLETED RETURNS of shipments of tin andterne plates from Great Britain to the United States during the past year show a total of 226,879 tons, against 255,583 tons in 1893, 276,479 tons in 1892 and 325,145 tons in 1891.

MARSHALL BROTHERS & Co., Philadelphia, Pa., send out a very tasteful calendar for the current year. It is a large sheet carrying the usual tablet of monthly calendars. The upper part presents the firm's name and calls attention to American tin andterne plates, besides giving the location of their offices and mills. Besides tin plates this firm make pickled and cold rolled sheets for tinning, lead coated sheets and corrugated sheets.

THE REYNOLDS BROTHERS CAN MFG. COMPANY, Havre de Grace, Md., have been incorporated to manufacture tin plate. The directors are Wesley M. Reynolds, William Vincent and others, and the capital \$25,000.

THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind., are reported as full of orders. They are now working on contracts for tinning machinery for the following concerns: Great Western Tin Plate Company, Joliet, Ill.; Monongahela Tin Plate Works, Pittsburgh, Pa.; Ellwood Tin Plate Works, Ellwood City, Pa.; Cincinnati Corrugating Company, Piqua, Ohio; Irondale Steel & Iron Company, Middletown, Ind., and the National Tin Plate Works, Anderson, Ind.

IMPORTS OF TIN PLATES into the United States during the 11 months ended November 30, 1894, according to the returns of the Bureau of Statistics, were of the value of \$10,896,819, as compared with \$14,764,833 in the corresponding months of the previous year.

B. F. BUTLER, JR., Mason Building, 70 Kilby street, Boston, who has been for some time the Boston agent of the Pottstown Iron Company, has also been appointed New England representative of the Phillips Tin Plate Company of Philadelphia. This company's product is high grade bright tin andterne plates.

THE LLANGENNECH TIN PLATE WORKS, Llangennech, Carmarthenshire, and the Melyn Works, Neath, Glamorganshire, South Wales, are reported as having restarted this week.

THE TIN PLATE WORKERS formerly in the employ of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa., and who propose to put up a co-operative tin plate plant at a cost of \$40,000, have been offered two free sites. One is in Port Vue, opposite McKeesport, Pa., and the other in Versailles borough. A Board of Trade committee will look into the project and decide upon the suggestion to offer a bonus of \$10,000 to the new concern to

locate in McKeesport. It is stated that subscriptions aggregating about \$25,000 have been received from the workmen.

THE WELL KNOWN New York tin plate and metal importing house of Robert Crooks & Co. have established themselves in their new quarters at 138 Front street, where the firm occupy the whole of the first floor. They are now in possession of a suite of commodious offices, handsomely appointed and affording much greater facilities than were found in their former location.

A FEW OF THE TINNING POTS in the new plant of the Monongahela Tin Plate Company, at Pittsburgh, have been put in operation, and it is expected that some of the black plate mills will be started up before this month is out. So far the concern have been buying black plates in the open market.

THE NEW CASTLE STEEL & TIN PLATE COMPANY, New Castle, Pa., contemplate making some extensive additions to their plant, the nature of which has not as yet been fully determined.

"TIN COATS" is the title of a neatly gotten up little 8 page pamphlet distributed by Henry W. Scattergood, Black Diamond Tin Plate Works, Philadelphia, containing information and advice regarding roofing tin in general and Scattergood's Black Diamond plates in particular. The text is diversified with cleverly drawn cuts of colored folks, each picture having worked into it the trade-mark of the concern—a black diamond.

THE PENNSYLVANIA TIN PLATE COMPANY of New Kensington, Westmoreland County, Pa., were chartered at Harrisburg this week with a capital of \$300,000. This is the company who will operate the large tin plate plant now being erected at New Kensington by the firm of Goldsmith & Loewenburgh.

Trade Notes.

THE JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, New Jersey, are distributing a third edition, revised for 1895, of their pamphlet, entitled, "Graphite as a Lubricant Scientifically and Practically Considered; Also its Value as an Accessory for Engineers and Machinists." The pamphlet is an interesting publication for those who desire to learn about the advantages of graphite for the purposes mentioned.

THE GRISWOLD MFG. COMPANY, Erie, Pa., on December 17, 1894, commenced suit in the United States Circuit Court at Minneapolis, Minn., against William Donaldson & Co. of that city for infringing their patent No. 229,250 on the American Waffle Iron, the charge being that they were continuing to handle a waffle iron which the Supreme Court had declared was a direct infringement of the above-mentioned patent. The Griswold Mfg. Company were immediately granted a preliminary injunction against them from handling this waffle iron in any way, and on the 9th of January this injunction was continued against Donaldson & Co. from any further infringement of such letters patent on the American Waffle Iron, which patent the United States Court of Appeals has fully sustained. The Griswold Mfg. Company advise us that while they do not intend to bring suits against their friends in the trade, they are desirous of protecting their rights against those who willfully insist

on disregarding their rights in this matter.

A FULL PAGE ADVERTISEMENT in this issue contains the interesting announcement of the F. H. Lawson Company, Cincinnati, Ohio. This firm are manufacturers of Tinware, Japanned Ware, Ironware and various specialties, including Street Lamps, Galvanized Oil Tanks and Cans, Water Coolers, Coal Vases, &c. They also are importers of and dealers in Tin Plate, Copper, Brass, Sheet Iron, Tinners' Tools, Tinners' Supplies, &c. A feature of the announcement is the reference to Lawson's Old Process Guaranteed Roofing Plate. This firm were established in 1816 and some illustrations show the various warehouses they have occupied.

THEIR MANY CUSTOMERS will regret to learn that the offices and warehouses of Ledwidge & Co., dealers in tinners' supplies, at 234 Lake street, Chicago, were closed by the sheriff on the 11th inst., on heavy confessions of judgment. The firm, which was composed of Matthew Ledwidge as sole manager, had one of the largest jobbing businesses in that line in the city, but it is estimated that the assets will not exceed \$20,000, while the confessions entered pass that amount by several thousands of dollars. They were as follows: C. H. B. Sheet Milling Company, \$5023; Clark, Quilen & Morse, Peoria, \$3500; C. S. French & Co., New York, \$5023; Falcon Iron & Nail Company, Niles, Ohio, \$6500; Reverse Copper Company, Boston, \$1500. There is another confession in favor of an uncle of the defendant, a London capitalist, for \$3500. The sheriff took possession of the Lake street offices first, and not finding sufficient property to satisfy the judgment, levied on the warehouse under the West Randolph street viaduct. It was filled with sheet steel and iron and tin plates. It is said that Mr. Ledwidge attempted to carry on a large business with a small capital and overtaxed his credit. All the confessions entered were, with one exception, on notes given for stock bought on credit. The firm were supposed to do a business amounting to \$200,000 annually. Mr. Ledwidge established the business six years ago.

NATIONAL WRINGER & MFG. COMPANY, Canton, Ohio, are very busy, running 100 men ten hours a day and four hours at night. During 1895 they expect to do the largest year's business in their history, and are now making arrangements for the erection of an additional factory.

KRUFFEL & ESSER COMPANY, New York, issue an 1895 illustrated catalogue of over 400 pages, which is not merely a reprint from former ones, but has been rewritten, revised and enlarged by more than 100 pages. While the company confine themselves strictly to their line of business—Drawing Materials and Surveying Instruments—they have endeavored to omit nothing in this line which is good and reliable, and the catalogue therefore represents, it is remarked, the latest real improvements and the progress made since their last edition. There is also a large amount of explanatory matter, such as a short treatise on Drawing Paper, explanations about Drawing Instruments, of Planimeters and similar instruments, a description of the progress of Surveying Instruments, an illustrated paper on Verniers and their application, &c. Distributed through the book are a number of views of the several departments of the company's store and factories.

WILLIAM M. GOEBILLE, Main and Center streets, Cleveland, Ohio, is sending circulars to the trade directing attention to his facilities for making patterns. An announcement which is printed on a postal card is a clever bit of rhyming, printed, however, as ordinary prose.

THE WOODSTOCK OIL CAN COMPANY, Woodstock, Va., have been organized with J. C. Baker, president; I. R. Irwin, secretary; George W. Koonitz, treasurer, for the purpose of manufacturing an improved oil can.

WALLACE & SONS, Brass & Copper Rolling Mills, New York, issue a notice that their new catalogue for 1895 will soon be ready for distribution, which will contain the latest revised price-list of goods of their manufacture that are in force at the time.

THE HEATING TRADE will be interested in the announcement of the American Boiler Company, 84 Lake street, Chicago, and 94 Centre street, New York, which appears among our advertisements this week. Reference is made to their extensive line of Steam and Hot Water Heating Apparatus and the trade are asked to write for catalogue and prices.

THE GRISWOLD MFG COMPANY, Erie, Pa., have just issued a supplementary catalogue of new goods which also directs attention to some of their old leaders. The first articles mentioned are the Erie hollow ware, then the Erie aluminum cast ware. Illustrations are shown of aluminum tea kettles and saucepans and skillets, also lemon squeezers. The next few pages are devoted to the new improved American waffle iron, which is illustrated and described; then the American wafer iron. This is followed by the new improved French waffle iron and the French waffle iron and gas stove; likewise the French waffle stove and the French griddle. Other goods mentioned are the Erie double broiler, the Erie coffee mill, the Erie sliding ice pick, gas blast forge, &c. An interesting article on the superior quality of cast aluminum cooking utensils completes the little pamphlet.

SCHOLZ & WIMMER will in the near future open up with a full line of stoves, house furnishing goods and hardware at 596 Rhomberg avenue, Dubuque, Iowa.

Real estate transactions in New York City since January 1 have been unusually large and indicate a promising amount of business in this field in the new year. Some exceptionally large deals have been consummated. Business property is reported to be in particularly active demand and the amount of this class of investment now on the market falls considerably short of requirements. Flat and tenement houses, dwelling houses and vacant lots are all sought after, notwithstanding the fact that a large number of dwellings stood vacant in the past year.

A contract has been placed for lighting the cars on the Brooklyn Bridge by electricity. The lights will be furnished by the trolley system, each car having 16 lamps of 10 candle power.

According to the computation of the Actuary of the Treasury at Washington, the population of the United States will reach 70,000,000 by the end of the present year.

STOVE TRADE NOTES.

The Local Stove Trade.

Nearly every man, be he ever so charitable, takes a sort of grim satisfaction on learning that adverse conditions affecting the welfare of his own business prevail generally and that others are affected by them as well as he. This satisfaction, poor as it is, and due to the weakness of human nature, is about all that many stove men reaped from their business during the past year. There is no denying, however, that it does tend to elevate the spirits which become depressed in times of poor business, to know that one is no worse off than his neighbors, as it allays uncertainty and accounts for the failure of well considered plans that were confidently relied upon to hold up one's business to, or force it beyond, a certain point, and that his methods were not at fault.

If any man so devoted himself to his own business during the past year to maintain its standard that he found no time to take observations of his neighbors' or to ascertain how it had gone with his competitors generally, it must have been a consolation to him to learn that he probably reaped as much return proportionately to his efforts as any of his competitors.

The year of 1894 made so poor a record for itself that it should not be hard in the new year to eclipse it, and it is encouraging to record that it starts off well. The greatest percentage of decline during 1894 occurred in January, when the stove business fell off anywhere from 40 to 75 per cent., this excessive decline being due to two causes. The main one was the unexpected and unusual sales of heating stoves made in January, 1893, owing to the extremely cold weather which January '94 did not have, and the general indisposition to buying anything until the people had taken their bearings on the opening of the new year to see what harm had been done during the great financial storm of the year before.

Manufacturers were at sea as to buying material or making goods. In fact they did not need to manufacture, many having run their foundries as long as the holidays for the benefit of their employees, thus giving plenty of stock on hand. The consequence was that foundries were closed indefinitely, and they deferred making contracts as the market at that time was a falling one, the poorest sort to stimulate buying. Jobbers were slow in seeking the manufacturer for the same reason of having carried over a large stock, and they had

no anxiety about getting goods when wanted; dealers would not order a single stove they could do without, and urge the sale of anything in stock rather than buy another pattern called for; while the consumer would not buy a stove if he could escape death by freezing without buying one, so that it was as though the stove business from top to bottom had stopped breathing until conditions had been analyzed, bruises examined and losses ascertained, and again until it was learned, if possible, how the tariff cat would jump, or a business man found whether his business really belonged to him or his creditors, and whether it would be more appropriate to make an order or make an assignment.

The stove trade is certainly in a better condition now than it was then. Sales have increased about 20 per cent., and it cannot be attributed to the weather, for though we had some cold days in the first part of the month, it has been warm, rainy and miserable ever since, with a great deal of sickness from colds and grippe, conditions really hurtful to business. So far as the wholesale trade is concerned, the demand has been more general and not increased by larger sales of heating stoves, but by small increases in nearly every variety and every department, including the exporting of stoves. Remittances in settlement of last year's accounts are quite satisfactory in number and amount. Rather more paper is tendered than two years ago, but rather more money than a year ago. It is not well to shout until out of the woods, but to say less for January so far than is here said would be to deprive it of credit that is due.

California Stoves.

Our experience with Californians has always been of the most pleasant character. We have the highest regard for the citizens of the Golden State, and have often been inclined to envy the lot of those to whom Fate has been so kind as to give them the opportunity of residing in a locality whose climate is so universally praised. But there are cynics in the land, and they not only find fault with the climate of California but also speak disrespectfully of California stoves. Following is what one of these dyspepsics had to say in a recent issue of the Chicago Record:

This question of window screens in the South is as vexatious as is the stove question in California. Instead of advertising herself as what she is, a superb summer resort, California chooses to be known as a winter resort for invalids. The result is that people in delicate health flock to California in

winter and, after shivering for two months, come away with a violent prejudice against California climate. In the sunshine California is lovely; in the shade California is as miserable a spot as ever drove an anemic to suicide. The plain truth is that the average temperature (from December 1 to March 1) in California is 60° outdoors; indoors it is 50°—that is to say, it is colder indoors than out.

Col. Mulberry Sellers (he must have been a native of California) used to say that all a person needed in order to keep warm was the appearance of heat. This is evidently one of California's pet theories. There are to be met with in that part of our country some of the most remarkable stoves we ever clapped eyes on. It is commonly reported that California has the biggest liars and the smallest matches in the world; we wonder that the stoves of California are not included in this *bon mot*, for surely it were hard to conceive of stoves more illiputian than these miniature affairs which are called into service whenever the chilled traveler lifts up his voice in expostulation against the alleged geniality of "our glorious climate."

Our friend Leigh Lynch had an interesting experience at Riverside. He arrived late in the evening and ordered a fire in his room, for the night was rainy, damp and cold. After supper he went to his room and sat down to read the newspapers. He felt so chilly that he rang the bell for the porter.

"I must have a fire," said Mr. Lynch, peremptorily. "I ordered one an hour ago, and it is very curious that my order was not attended to. I can't freeze to death; haven't you a stove about the place?"

"Of course we have, sir," said the porter, very much embarrassed; "I built your fire as you ordered, and—and you're sittin' on the stove, sir!"

Mr. Lynch arose and scrutinized the object upon which he had been sitting.

"Is that a stove?" he asked, disdainfully.

"Yes, sir," answered the porter, apologetically.

"Bless my soul! so it is," said Mr. Lynch. "I thought it was a new-fashioned kind of campstool!"

An expert scientist who was one of our party in California made a careful analysis of a dozen stoves, representing every size in use in what is termed the perennial (or bananas) belt.

He reported (under oath) that the average California stove had a heating capacity of 3.32 of one candle power.

One of the ladies in the party carried off one of these stoves (as we recollect it was the Mammoth No. 1), and wore it as a charm on her watch chain.

GRINBERG BROTHERS, 155 South street, New York, issue a circular of Eagle gas heaters and gas radiators. They are also preparing for the summer trade some new gas cook stoves. In addition to their gas stove business they manufacture a large line of sheet metal goods in stove pipe, adjustable elbows, &c.

ODD PLATES.

FRANK P. McCONNA, the well-known representative of the Michigan Stove Company at Buffalo, will continue to visit the trade in New York and Pennsylvania in the interests of Garland stoves and ranges.

GEORGE G. GARRY of Indianapolis, Ind., has accepted a position with the Michigan Stove Company of Detroit, and will represent them in the State of Indiana.

THE FOREMAN of the Buckeye Stove Company has recently been in Mancelona, Mich., dismantling the factory at that place, with a view to removing the machinery from there to the new works at Gladstone, Minn.

DE HAVEN & Co., Limited, of Pittsburgh, Pa., have issued an illustrated sheet printed in colors and folded to a size suitable for an envelope. On the sheet in script letters are the words, to which a hand points, "We ask a question." Unfolding the sheet we find the question to be "Do you handle a range for burning natural gas?" If the question can be answered in the affirmative the company suggest that before placing orders the merits of the Cinderella gas range be examined. They state that the Cinderella will contain some new features for this year, and that its excellence of construction and beauty of design are of a high order. The Cinderella will be ready for the trade about the first of February, and to those who are interested the company will be glad to send descriptive circulars and price-lists.

THE FOLLOWING DIRECTORS have been elected by the Canton Furnace Company of Utica, N. Y.: E. A. Carter, W. J. Carton, J. B. Jones and S. A. Batty.

JOHN T. HYATT, who has been for years the foreman of the mounting department of the stove works of Rathbone, Sard & Co., at Albany, has resigned to accept a responsible position at Troy, N. Y.

McLANE & SCHANCE, Linesville, Pa., favor us with a very neat calendar for the new year. The card, which has serrated edges, measures 6 x 8 inches, and has an eye for hanging it upon the wall. The upper portion is embellished with a picture representing the old way of making maple sugar, while another picture represents the new way. The latter involves the use of one of the firm's maple evaporators and other kindred appliances. The 12 leaves forming the calendar proper are attached to the lower portion of the card, the printing being in black upon a white ground. Accompanying the calendar is a circular illustrating and describing the evaporators made by the firm.

A. H. DAVE, who for the past three years had represented the Michigan Stove Company in Indiana, has been transferred to the Southern Michigan territory, where he formerly traveled for many years, and where he has a host of friends.

THE large force of employees of Rathbone, Sard & Co. of Albany have been made happy by a resumption of operations, after a shut-down of the plant for two weeks.

THE DANVILLE STOVE COMPANY of Danville, Pa., and 284-286 Pearl street, New York City, have issued an announcement in the shape of a neat folder relative to the spring season of 1895. Attention is called to the fact

that the company will offer the trade new lines of gas stoves, four-hole ranges, furnaces, brick set ranges and the Beaver range, made from artistic patterns and executed by skilled workmen. In the line of Monarch gas and gasoline stoves they will offer the New Process, new high and low juniors, with single generating burner; their No. 14 stove improved for 1895 with continuous fire sub-flame; a new line of ovens, and numerous other special features.

WILLIAM G. BARROWS, 109 Fage avenue, Syracuse, N. Y., has just issued a book that will be of much interest to the heating trade. It is a collection of estimate blanks for warm air heating and was compiled with a view to making the blanks meet the requirements of furnace work. In the book, which measures 10 x 4½ inches, are 50 blanks, each one covering two pages. At the top of the first page are lines for the name and address of the customer; then come memoranda for the number of registers, partition pipes, total cubic feet to be heated, height of the different stories. Following this in a wide column are lines for entering the price of the registers and borders, 12 spaces being allowed to them. Opposite the different sizes of registers are given the prices. Following is a list for pipe, register boxes, and heads covering 21 lines with prices opposite the goods. The second page continues with register boxes, elbows, boots, collars, dampers, thimbles, &c., and ends with miscellaneous items of labor, setting, board bills, railroad fares, mason work, &c. A double column is provided for the insertion of prices and at the end are lines for the total contract price and the date payable. A book of this sort for reference would be of great service to furnacemen and others.

CHAS. A. STOCKSTROM, president of the Quick Meal Stove Company and Ringen Stove Company, St. Louis, Mo., is off on a month's sojourn in Old Mexico. Mr. Stockstrom is making a distinct pleasure trip and is not associating business with his journey at all. He is making the trip alone, and expects to return to St. Louis about the middle of February.

THE STOCKHOLDERS of the Bloomington Stove Company, Bloomington, Ill., held a meeting Monday afternoon, January 7, the principal object of which was to reorganize under the new law and adopt a new charter, the old one having expired by limitation.

INOLINO, MILLS & WELLS of Indianapolis, Ind., have issued an announcement to the trade, to the effect that they have purchased the stock and business of the Famous Stove Company at 135 South Meridian street of the city named, and will continue the wholesale stove business at that place under the same firm name. The trade will doubtless recognize the name of A. E. Wells as a former manager of the Cleveland Co-operative Stove Company and also of S. R. Wells of Indianapolis. The firm request that all orders be addressed to the Famous Stove Company, and all remittances due the Famous Stove Company prior to January 1 to Parkhurst Brothers & Co., Indianapolis, Ind.

THE NEW YEAR'S GREETING issued by Henry Gleason of 106 Beekman street, New York, is unique in its way. It consists of an extract from a trade paper relative to the business of Mr. Gleason during 1894, printed upon coarse brown wrapping paper, folded

once and finished with rough edges. This is inclosed in an envelope of the same material, properly addressed and stamped.

DURING the past month agents of the Peninsular Stove Company of Detroit, Mich., have been giving in various parts of the State exhibitions demonstrating the practical merits of Peninsular wrought steel ranges. These displays have been made at Battle Creek, Grand Rapids, Flint, Ann Arbor, Saginaw, Bay City, West Bay City and other places of greater or less importance. In connection with the exhibitions there have been in several cases bread making contests, the prize at Flint being a \$50 steel range, given by J. B. Wilson. The contestants were required to bake three loaves of bread and take them to the store of Mr. Wilson, where judges would decide to whom was entitled the prize. A free lunch and concert were given at his store every afternoon and evening, and after the prize had been awarded the bread was distributed to the poor. This contest brought out about 500 loaves of bread, the prize being awarded to Mrs. A. C. McCall. The contest at West Bay City produced about 650 loaves of bread, the range being won by Mrs. W. J. Hawkins. These exhibitions have served to increase the popularity of the company's goods and will doubtless be the means of making large sales.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, are distributing a rather novel calendar for the new year in the shape of an easel carrying 12 white cards, upon which in red and black are printed the days of the week and month. These cards are carried in what may be called a pocket, the front of which is open exposing to view the letters and figures of the calendar. At the expiration of a month a card is taken out and placed at the back of the pack, this bringing to view the calendar for the succeeding month. Above and below the opening in the face of the easel, which is finished in imitation of leather, is the following inscription: "Cooking made easy by using the wonderful New Process stove manufactured only by the Standard Lighting Company, Cleveland, Ohio."

EUGENE MUNSELL & Co., 218 Water street, New York, are in the market this season with an extensive line of gasoline stoves. They have about completed a new catalogue of 26 pages, which will be mailed to the trade next week. The early pages are given up to illustrations and descriptions of the Standard Lighting Company's New Process, which proved a good seller with the Eastern agents last season. The Reliable Manhattan junior stoves are shown in various styles; also the company's two and three burner step juniors, which are new lines this season. The balance of the catalogue is devoted to low and high juniors, with lay down safety tanks and giant burners. The company also have a full line of rigid tank juniors which are known as the Junior Manhattan B.

S. T. DICKINSON severed his connection as manager of the Lehigh Stove & Mfg. Company, of Leighton, Pa., on Saturday, January 12.

THE HIGHLAND FOUNDRY COMPANY of Boston, Mass., were the subject of a very interesting article which appeared in the issue of the Boston Herald of January 7. According to this authority the foundry was established in 1836 by George F. Bowers on the site occu-

pled by the present plant at 139 165 Pynchon street, then in the town of Roxbury, but now better known as Boston Highlands. The business continued to increase and a few years later Mr. Bowers associated with him Joseph Pratt, the firm name becoming Bowers & Pratt. In the year 1856 Mr. Bowers retired, and until 1863 the business was conducted under the name of Pratt & Co. In that year, however, C. E. Wentworth and J. H. Wentworth were admitted to partnership and the style of the firm was changed to Pratt & Wentworth, which continued until the organization of the existing company in 1876. The Highland Foundry Company are a Massachusetts corporation, their officers being William H. Towne, president, and Percival W. Elliott, treasurer and manager, who, with Captain Albert Cooper, George W. Elliott and Charles B. Wheelock, comprise the board of directors. In the article above referred to mention is made of the company's leading specialties and to the extensive business which the enterprise and ability of the management have built up.

IN A RECENT ISSUE of the *Sentinel*, published at Milwaukee, Wis., there was presented a short history of the leading industrial establishments in that place, among which is the Milwaukee Gas Stove Company, a young but successful concern, organized March 14, 1891. The establishment now occupies a four-story brick structure, covering an area 40 x 110 feet. The article describes at some length the specialties turned out by the company, and refers to the gratifying business which has been built up.

THE SILL STOVE WORKS of Rochester, N. Y., recently made a test trial of their new Sterling range, the results of which are described as follows by a local paper: The fire pot was filled with coal. The coal was then removed and kindling put in and the fire lighted. At exactly seven minutes past 12 o'clock p.m. the first baking, consisting of 16 full-sized loaves of bread dough, was put in the oven. From that time on until one barrel (196 pounds) of flour was baked the trial continued, the last baking being taken out at 17 minutes past 10 o'clock p.m.; 231 extra sized loaves of splendid bread were baked. There was not an ounce of coal used except the charge put in the fire pot before commencing.

CHARLES NOBLE & Co., Liberty Stove Works, Philadelphia, Pa., are distributing to their friends a handy little pocket diary and calendar combined. Besides a generous amount of space for recording engagements and memoranda pertaining to each day in the year, there are several pages ruled for the keeping of cash accounts, and others ruled especially for the registration of addresses and other memoranda of special importance. A feature of the diary is the tabulation of statistics in regard to populations of towns and States, and rules and regulations of the domestic postal service. The book is of convenient shape for the vest pocket, is neatly and strongly bound in leather, and unless we except the firm's complimentary card on the front of cover, contains nothing of an advertising character.

WM. O'KEEFE, who has represented the Excelsior Mfg. Company of St. Louis in Northern Missouri for some years past, has concluded to abandon selling Charter Oak stoves and ranges, and has associated himself with the

Maturity Savings & Loan Company of St. Louis. As a token of esteem in which Mr. O'Keefe is held by the salesmen and other *attachés* of the Excelsior Mfg. Company, he was presented by them with a handsome gold watch chain, and accompanying it were the good wishes of the entire establishment for his success.

JACKSON EVANS MFG. COMPANY, St. Louis, Mo., on account of a steadily increasing business have been compelled to vacate their old quarters at 301 South Commercial street, and have moved to new quarters at 806 North Main street, which building was formerly occupied by Paddock-Hawley Iron Company. The building is 30 x 110 feet, four stories high, with basement. The basement will be utilized for unloading and cutting sheet iron, first floor office and warehouses, second and third floors manufacturing and fourth floor wareroom and japanning department. This company commenced the manufacture of Acme stove pipe elbows in St. Louis some six years ago, and have continued to increase their business yearly.

THE ECLIPSE STOVE COMPANY, who were recently organized at Rockford, Ill., and who absorbed what was formerly the Van Wie Company, have occupied their new building and are now in active operation. The plant fronts on Race street, with the foundry on Rock River, which flows in the rear of the establishment. Directly in the rear of the office are the vaults for the storage of patterns, while to the left are the mounting, finishing and tin shops, equipped with all the necessary appliances for the proper conduct of the business. Between the foundry and mounting shop is the crating, storage and shipping department, from which goods can be loaded directly on to the cars, there being a railroad switch running up to the loading platforms. The leading spirit in this enterprise is George D. Roper of Rockford, who states that he has adopted the trade name "Eclipse," because he is determined not only to eclipse his former efforts, but those of his competitors.

THE TWIN BURNER VAPOR STOVE COMPANY of St. Louis, Mo., have issued their annual catalogue for 1895, within the covers of which illustrations are presented of their leading lines of Twin Burner stoves. Attention is specially invited to their line of Process stoves for which strong claims are made. The catalogue consists of 20 pages, is printed in an ink of bluish tint and carries illustrations of an interesting assortment of specialties. The leading place is given to the Twin Burner Process cabinet, one size of which is new for 1895. The Twin Burner Process is next considered, and is shown with two and three burners with step, and two and three burners without. There are also presented illustrations of Twin Burner high and low juniors, together with directions for taking care of independent burner gasoline stoves. A four-page folder accompanying the catalogue shows the company's new line of high and low junior stoves with stationary tanks.

CHARLES E. COLEMAN, representing Eugene Munsell & Co., 218 Water street, New York, has been notifying dealers in the territory which he covers that he will call upon them in a few days to take their orders and talk over matters for 1895. The notification is in the shape of an illustrated circular, the address side of which is bright red while the other is white. It

is folded in such a way as to be malleable and conceal what is within. The notice states that for the season of 1895 many new features have been added to the already extensive and modern lines of Manhattan ranges and stoves, and that Mr. Coleman feels sure he can interest all upon whom he may call. He requests that dealers withhold their orders until he visits them.

THE MICHIGAN STOVE COMPANY are issuing this year very artistic advance notices of the coming of their traveling representatives. One now lying before us is a four-page circular of heavy uncalendered paper, which bears on the outside page a striking illustration by Will H. Bradley, the famous pen and ink artist, whose work is now exciting a *furore* in art circles. A deep crimson border brings out the black outlines of the illustration very effectively. The inside pages are printed in antique type, formerly known as "black letter," with the scribe's name in crimson. The company are also circulating beautifully printed and richly illustrated circulars descriptive of the Columbian Garland steel range, which is made in every style and size.

THE WESTERN STOVE & MFG. COMPANY of Milwaukee, Wis., have established a Chicago office in charge of T. J. Duffy, Jr., in Rooms 73 and 74 at 88 and 90 Washington street. They have made an excellent selection in their Chicago representative as he is well and favorably known in the local stove trade.

THE JOSEPH BELL STOVE & RANGE COMPANY of Muncie, Ind., and with branch house at Wheeling, W. Va., have favored their friends in the trade with a very attractive calendar for the new year. The heavy piece of white cardboard is embellished with a beautiful reproduction of a picture by C. Schultz entitled "An Old Water Mill in Germany." This occupies fully one-half of the card, below which is advertising matter relative to the company and the goods which they manufacture. At the bottom are the 12 leaves carrying the calendar proper. The printing is in bold black letters and figures upon a white ground and shows in addition to the days of the week and month the various phases of the moon.

AT THE ANNUAL MEETING of the stockholders of the Bellaire Stove Company, Bellaire, Ohio, held on Tuesday, January 15, the old board of officers and directors was re-elected. The officers are: H. Roemer, president and treasurer; J. B. Montgomery, vice-president; E. H. Rider, secretary, and Robert Johnston, manager. The reports presented at the meeting showed that while the company did not make a fortune during the past year the volume of trade was better than generally expected. The demand for the company's goods is encouraging and the new year opens with bright prospects. Ross Reed will represent the company on the road during 1895.

The Aqueduct Commissioners of New York City have gone through the preliminaries for purchasing about 300 acres of land at Jerome Park for a new reservoir. The land will cost about \$3,000,000, and it is calculated that the reservoir will cost about \$3,500,000. It will hold about 1,500,000,000 gallons of water, or about half as much again as the present large reservoir in Central Park. It is calculated that the work will be completed in about five or six years.

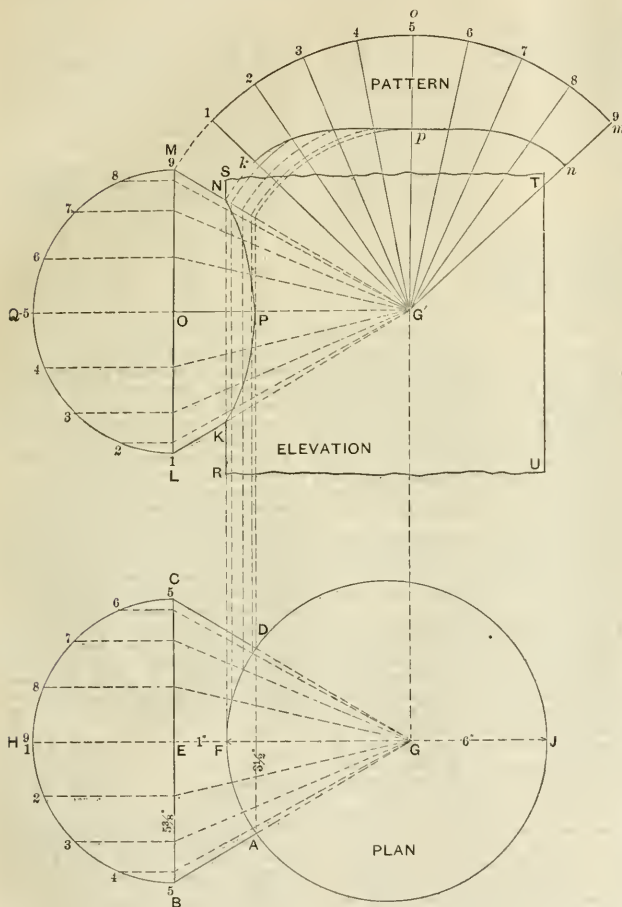
THE TIN SHOP.

Pattern of a Frustum of a Cone Intersecting a Cylinder.

From W. E. W., Grand Rapids, Mich.—I have been at work on a pattern for some time, and am unable to describe it correctly. The pattern desired is for a flaring article to join a

ing the half profile of cone at its base and A D J the cylinder. In line with the cylinder in plan draw the elevation, as shown by R S T U. With the T-square placed parallel to the sides of the pipe, carry a line from the point G in plan to any convenient point, as G' of elevation. At right angles to G' G

lines at right angles to L M, cutting that line as indicated. From the points thus obtained in L M carry lines to the apex G', as indicated by the dotted lines in the engraving. Divide B H C into the same number of equal parts as was L Q M, and from the points thus obtained carry lines at right angles to B C, cutting that line as indicated. From the points thus obtained in B C carry lines to the apex G, cutting the plan of pipe as shown. With the blade of the T-square placed parallel with G G', and brought successively against the points thus established in the plan of the pipe, cut lines of corresponding number drawn from the points in L M to the apex G', as indicated from K to N, and extend these lines to M G'. A line traced through these points of intersection, as shown



Pattern of a Frustum of a Cone Intersecting a Cylinder.—Fig. 1.—Plan, Elevation and Pattern.

cylinder. As shown in plan the diameter of cylinder F J is 6 inches. The diameter of frustum of cone is 5½ inches at B C, 2½ inches at A D and the projection of E F is 1 inch.

Answer.—In the plan, Fig. 1, let A B C D F represent the section of cone, B C G the cone from which the section is cut, B H C the semicircle represent-

draw G' Q, indefinitely, and extend B C through Q G', cutting same at O. With O as center, and E C of plan as radius, describe the semicircle L Q M, representing one-half of the profile of cone at the larger end. Divide L Q M into any convenient number of equal parts, as indicated by the small figures. From the points thus obtained carry

by K P N, represents the intersection of cone with cylinder in elevation, as shown by A F D in plan.

For the pattern, proceed as follows: From G' as center, with G' M' as radius, describe an arc as indicated by l o m, and starting from l, step off the stretch-out of the half profile L Q M, as indicated by the small figures. If the entire pattern is required in one piece extend the arc l o m, and from m set off a duplicate of l o m. From the points thus obtained draw radial lines to G', as indicated. Then with G' as center, and with radii corresponding to the points established in M G', describe arcs, producing them until they cut lines of corresponding number drawn from G'. A line traced through these points of intersection, as shown by k p n, will give the pattern of part of article shown in elevation by L M N P K. For the shape of opening in the cylinder corresponding to the cut A F D of plan, or K P N of elevation, proceed as follows: Draw N' K' of Fig.

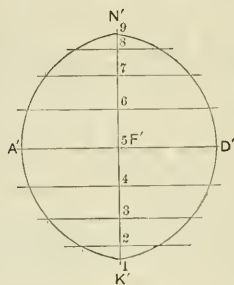


Fig. 2.—Shape of Opening in Cylinder.

2, and through the center F' draw the perpendicular A' D'. From F' set off on N' K' the length of lines drawn through O P of elevation, intersecting the miter line N P K. Through the points thus obtained in N' K' draw lines parallel with A' D'. Measuring in each instance from the line N' K', set off on each side of it the distance from F' in plan to lines of corresponding number drawn from C B to G. Through the points thus obtained trace a line, as indicated by A' N' D' K'.

The Resistance to Corrosion of Some Light Aluminum Alloys.*

BY JOSEPH W. RICHARDS, PH.D.

It is well known that pure aluminum is a comparatively soft metal, and that for many mechanical purposes where strength is a prime consideration it is strengthened and hardened by being alloyed with a small proportion of some other metal, such as copper, nickel, silver, German silver, or titanium. While pure aluminum has a tensile strength in castings of 15,000 pounds per square inch, and in sheet of 25,000 pounds, the addition of 5 per cent. of nickel or German silver or 2 per cent. of titanium increases the strength to 20,000-30,000 pounds in castings and 40,000-50,000 pounds in sheet. At the same time as the strength is thus increased from 50 to 100 per cent., the specific gravity is not increased over 5 per cent.; all of these light, strong alloys being lighter than 3. An American firm making aluminum bicycles uses an alloy containing about 8 per cent. of copper and 12 per cent. of zinc, giving them castings of great rigidity.

The object of the tests about to be enumerated was to determine the relative resistance of some of these light alloys to corrosion. The strips of rolled metals were immersed in the following liquids:

1. *Dilute Caustic Potash*, 3 per cent.—The behavior of the alloys in this solution shows their relative resistance to alkali, such as in strong soaps, &c., and shows the suitability of the alloys for laundry purposes. Solution cold.

2. *Dilute Hydrochloric Acid*, 3 per cent.—This is the only acid which attacks aluminum rapidly. Solution cold.

3. *Concentrated Nitric Acid*.—Shows the suitability of the alloys for replacing platinum in the Grove battery. Acid cold.

4. *Strong Acetic Acid*.—Shows the resistance of the alloys against vinegar, and bears directly on the use of the metal for pickling kettles, &c. Solution at 60° C. = 140° F.

5. *Strong Solution of Common Salt*.—This shows the resistance to the agent present continually in cooking utensils. It also shows light on the suitability of aluminum for the metal cases in which artificial ice is made, a use for which its great heat conductivity would particularly fit it. Solution at 65° C. = 150° F.

6. *Solution of Carbonic Acid Gas*—Aluminum has been suggested for trimmings on soda water fountains and for the metal cups for holding soda water glasses. The action of water charged with CO₂ would also correspond to the

action of rain water and in general to exposure out of doors. Solution at 25° C. = 77° F.

of the metal would be an additional point of superiority over the tin or galvanized iron vessels now used.

Table I.—Relative Resistance to Corrosion (Pure Al = 100).

	Caustic potash.	Hydrochloric acid.	Nitric acid.	Salt.	Acetic acid.	Carbonic acid water.
3 per cent. copper.....	13.0	10.8	26.2	37	41.2	not corroded
3 per cent. German silver ..	1.4	4.4	9.8	78	26.0	133.3
3 per cent. nickel.....	5.9	3.2	11.3	31	20.7	33.8
2 per cent. titanium.....	47.0	133.3	51.9	63	80.5	not corroded
99 per cent. aluminum.....	100.0	100.0	100.0	100	100.0	100.0

Table II.—Actual Losses Per Day (in Milligrams per Square Centimeter of Surface).

	Caustic potash.	Hydrochloric acid.	Nitric acid.	Salt.	Acetic acid.	Carbonic acid water.
3 per cent. copper.....	265.0	53.3	36.1	0.1	0.4	0.0
3 per cent. German silver.....	1,534.4	130.6	97.7	0.05	0.6	0.01
3 per cent. nickel.....	580.3	180.0	83.0	0.13	0.75	0.04
2 per cent. titanium.....	73.4	4.3	18.6	0.06	0.20	0.0
99 per cent. aluminum.....	34.6	5.8	9.6	0.04	0.15	0.01

Table III.—Time Which Would be Required by the Solution in Eating Through the Walls of a Vessel 1 Mm. (1/32 inch) in Thickness.

	Dilute potash. Days. Hrs.		Dilute hydrochloric acid. Days. Hrs.		Conc. nitric acid. Days. Hrs.		Strong. acct. ac. Days.	Strong. salt. Days.	Saturated. carbonic acid water. Days.
3 per cent. copper.....	1	2	5	7	7	20	705	2,820	.....
3 per cent. German silver.....	..	4	2	5	2	22	467	5,600	28,000
3 per cent. nickel.....	..	12	1	13	3	8	379	2,130	7,000
2 per cent. titanium.....	3	20	64	..	14	20	1,375	4,550	.....
99.9 per cent. aluminum.....	7	20	46	22	28	8	1,810	6,800	27,000

Remarks on the Tables.—For bath-tubs, wash basins, laundry tubs, wash boilers, and any use in which the alloys come in contact with alkali, the pure metal resists corrosion far better than any of the alloys examined. At the same time, if greater strength is required, the copper alloy stands next in suitability and possesses the advantage of casting with less shrinkage than pure aluminum.

For purposes where free hydrochloric acid may accidentally be encountered, the titanium alloy recommends itself as far superior to the other alloys, and even to the pure metal.

For use in nitric acid, the pure metal stands first, and it would be a fair conclusion that the purer it is the greater will be its resistance. It would, therefore, be preferable to obtain the very purest aluminum for making battery plates, such as the Pittsburgh Reduction Company's 99.9 per cent. quality. A sheet of such metal 1/16 inch in thickness would bear over a month constant immersion in the concentrated acid.

In strong acetic acid the alloys all resist well, but the pure aluminum best. If it is necessary to have considerable strength, the titanium alloy is the best. The use of such alloys for steam jacketed kettles in pickle and vinegar works, also for evaporating dishes, &c., in chemical works, is of rapidly growing importance.

In strong salt solution, pure aluminum is best, but the German silver alloy stands highest among the alloys.

Since this alloy is of a fine color, strong and quite elastic, its use would appear advantageous in cooking utensils, but especially for the cans in ice cream freezers and the large rectangular vessels in which artificial ice is frozen. Aluminum stands next to copper and silver in heat conductivity, and its use for the last mentioned purpose would insure a very rapid flow of heat from the contents of the cans, while the innocuity

For out of door exposure, as shown by the resistance to water charged with carbonic acid, the titanium or copper alloys are to be recommended. They are of about equal strength, but the copper alloy has the best color.

There are numerous purposes to which aluminum can be applied where the general requirements are fine color, strength, springiness and hardness, without particular reference to the action of the above mentioned corroding agents. Such are, for instance, penholders, paper cutters, pocket rules, match boxes, cigar cases, combs, tongs, watch and key chains, field glasses, surveyors' instruments, mariners' sextants, and many others. For all such purposes, the German silver alloy can be recommended as being the best adapted. Its mechanical properties have been determined by the writer, as follows:

	Cast.	Rolled.
Specific gravity.....	2.73	2.83
	Lbs.	Lbs.
Elastic limit.....	20,500*	40,000*
Tensile strength.....	22,450*	42,040*

The color of this alloy is whiter than pure aluminum; it is considerably harder, therefore stands wear better, and in thin sheets is almost as elastic as steel.

The right of way for an electric railway from Merced, Cal., to the Yosemite Valley is reported to have been secured. The power is to be established at three points on the Merced River. The new road will be broad gauge and adapted for both passengers and traffic. A contract for the construction of the line is said to have been taken by the Pacific Improvement Company. The new company is capitalized at \$3,500,000.

*Test of specimens, prepared by the writer, made on the United States testing machine at Watertown Arsenal.

*Specimens prepared by the writer, rolled hard, tested by Tinius Olsen, Philadelphia.

*Read at the stated meeting of the Chemical Section of the Franklin Institute, held December 18, 1894.

TRADE REPORT.

The Iron Market.

The prospect of a heavy consumption of rolling mill products is very good. While the big work does not go into the shops for a month or two, recent developments seem to foreshadow a modest recovery in prices by spring. For the present, low prices continue to prevail all along the line on all material for prompt delivery.

Pig Iron.—The market in New York continues quiet, although a fair movement is progressing. So far as can be learned the advance in rates on Pig Iron from Southern furnaces of 25¢ per ton is in force. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

There is a slightly improved demand reported from the Philadelphia market and prices of Foundry and Mill Irons are, if anything, steadier than they were a week ago. Quotations vary according to circumstances, but \$10.25 may be considered a bottom figure for No. 3 Iron, \$10.75 for No. 2 Plain, \$11.25 for No. 2 X, and \$12.25 for No. 1 X. Standard and favorite brands command more money, probably \$11.75 for No. 2 X and from \$12.50 for No. 1 to 50¢ above that figure, according to quality required. The demand is fair, but the supply is larger than it has been, in consequence of which the outlook in regard to prices is somewhat uncertain. Sales are usually at about the figures quoted below, namely:

Standard No. 1 Foundry X.....	\$12.25	@	\$12.75
standard No. 2 Foundry X.....	11.50	@	11.75
No. 2 Plain.....	10.75	@	11.00
No. 1 Soft.....	11.50	@	11.75
No. 2 Soft.....	10.75	@	11.00

The only item of importance reported from the Chicago Pig Iron market is the statement that the freight on Connelville Coke is expected to be reduced about 10¢ per ton on February 1. Sales of Pig Iron have been small and inquiries are light, but shipments from local furnaces are quite heavy, as the local companies are well fixed for orders. Southern Iron is reported to be in better demand since prices have been modified, so that they are now more nearly on an equality with prices of Northern brands of the same grade. Lake Superior Charcoal is quiet, the sales of the week being confined to small quantities. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00	@	\$14.00
Local Coke Foundry No. 1.....	10.25	@	10.50
Local Coke Foundry No. 2.....	9.75	@	10.00
Local Coke Foundry No. 3.....	9.50	@	9.75
Local Scotch.....	10.50	@	11.00
Ohio Strong Softeners No. 1.....	12.50	@	13.00
Southern Siverly, No. 1.....	11.50	@	11.75
Southern Siverly, No. 2.....	11.25	@	11.50
Southern Coke, No. 2.....	10.00	@	10.50
Southern Coke, No. 2.....	9.75	@	10.25
Southern, No. 1, Soft.....	10.00	@	10.50
Southern, No. 2, Soft.....	9.75	@	10.25

There is no improvement in either demand or prices to be noted in the Pittsburgh district for foundry Irons.

The lower quotations given herewith are occasionally shaded for desirable orders. Quotations are given as follows:

No. 1 Foundry.....	\$10.50	@	\$10.75
No. 2 Foundry.....	10.00	@	10.25

Pipe works have continued the largest sellers of Pig Iron in the Cincinnati district for the past few weeks, and further sales of Pig Iron aggregating about 4000 tons have been recorded during the week under review. With this exception the sales have been confined to small amounts, although the aggregate transactions form a very fair volume of business for this season. While large transactions have been the exception rather than the rule, the demand for small lots has been more general and extended, and for prompt delivery there has been little change in the tenor of the market. Large Southern companies have continued to hold firmly at full prices. Others have refused to shade established prices. Smaller companies, however, have continued to take current orders offered on a basis of inside quotations. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75	@	\$10.00
Southern Coke, No. 2.....	9.00	@	9.25
Southern Coke, No. 3.....	8.50	@	8.75
Ohio Soft Stone Coal, No. 1.....	14.50	@	15.00
Ohio Soft Stone Coal, No. 2.....	14.00	@	14.50
Lake Superior Coke, No. 1.....	11.75	@	12.25
Lake Superior Coke, No. 2.....	10.75	@	11.50
Hanging Rock Charcoal, No. 1.....	16.00	@	16.50
Hanging Rock Charcoal, No. 2.....	15.50	@	16.00
Tennessee Charcoal, No. 1.....	13.00	@	13.50
Tennessee Charcoal, No. 2.....	12.00	@	12.50
Bessemer.....	11.00	@	11.50
standard Southern Car Wheel.....	15.75	@	16.25
Lake Superior Car Wheel and Malleable.....	14.50	@	14.75

The St. Louis market fails to show any material change. Orders do not average over 100 or 200 ton lots, although some manufacturers are reported to be at present figuring on much larger quantities. The furnaces are shipping considerable quantities of iron on old contracts, so that their stocks do not show any material increase. The situation is not nearly so discouraging as it was two months since, and the improvement, though slight, is a welcome one. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.50	@	\$10.75
Southern Coke, No. 2 Foundry.....	9.75	@	10.00
Southern Coke, No. 3 Foundry.....	9.25	@	9.50

Metal Market.

Pig Tin.—In the earlier portion of the week wholesale prices declined to the extent of about 1¢ per lb. The downward movement was an almost unbroken one for several days, and indications suggested that it was engineered by leading "bears" in London, who are sparing no efforts to force the syndicate to throw off its heavy load. Their action has been materially aided by the weight of heavy supplies. Later in the week the market assumed a firmer aspect, owing to a sharp advance in London, due to reports of light December shipments from the Straits. The jobbing demand has been moderate, and prices for small lots from store

are rather easier, 15¢ per lb being the ruling quotation for Straits Pig.

Copper.—Considerable business has been done and the market retains a firm tone throughout. Offerings are moderate and prices keep very steady. The export movement also has been large enough of late to absorb a substantial amount of the metal. Inquiry and small orders among the jobbing houses have been somewhat larger. Prices for small parcels of Lake Ingot are made on a basis of about 10 1/4¢ per lb. The exports of Copper from the United States during November and the 11 months ending November 30 are specified as follows in the report of the Bureau of Statistics:

	November, 1894.	1893.	11 Months, 1894.	1893.
Ore.	Tons.	Tons.	Tons.	Tons.
To United Kingdom.....	184	2,011	1,854	40,407
To Germany.....	.....	.....	1	1,043
To other countries.....	.....	.....	.....	.....
Totals.....	184	2,011	1,855	41,450

	November, 1894.	1893.
Ingot, bars and old.	Pounds.	Pounds.
To United Kingdom.....	3,507,555	5,715,564
To Germany.....	700,641	1,581,369
To France.....	1,257,794	3,103,495
To other Europe.....	2,826,576	7,036,713
To Br. No. America.....	30,630	161,640
To Mexico.....	11,357	.....
To West Indies and Bermuda.....	.....	3,400
To other countries.....	.....	10,000
Totals.....	8,634,763	17,712,721

	November, 1894.	1893.
Ingot, bars and old.	Pounds.	Pounds.
To United Kingdom.....	62,176,894	33,636,042
To Germany.....	19,714,385	15,796,167
To France.....	17,506,383	25,259,573
To other Europe.....	50,659,320	44,186,759
To British North America.....	285,162	578,597
To Mexico.....	198,080	85,507
To West Indies and Bermuda.....	7,481	15,704
To other countries.....	6,208	43,600
Totals.....	149,954,113	119,602,319

Sheet Copper.—Rather more interest in Cornish Copper is noted and inquiry has increased in volume. Orders are, however, still on a moderate scale and little or no material is being purchased by consumers for stock. Prices for small lots from store are firm on a net basis of 15¢ per lb.

Pig Lead.—Early in the week a lively market was experienced and some 1500 tons or more changed hands, wholesale prices for common Western being carried up 1/4¢ per lb, owing to the shutdown of Idaho mines and consequent reserved offerings. The market closed very firm in tone. The consumptive demand has been fairly active. Jobbing prices for American Pig rule at 3 1/4¢ @ 3 1/2¢ per lb. Bar Lead, in small lots, is quoted at 4¢ @ 4 1/4¢.

Lead Pipe and Sheet.—Consumers of manufactured Lead and plumbers' supplies have shown rather more interest in buying during the week. Jobbing houses in this city report considerable energy, but no very material improvement in the demand is looked for before the early spring. Prices in this section are generally held firmly to the list.

Spelter.—In the market for this metal the situation is practically the same as it has been for several weeks.

Transactions here continue to be on a moderate scale, the demand does not increase perceptibly, and the moderate business passing is chiefly at old prices. Western in small lots is quoted at 4¢ @ 4 1/4¢, with the inside figure for inferior brands.

Antimony.—The jobbing movement continues fair. Prices remain at about 8¢ for Hallett's and 9 1/4¢ for Cookson's.

Nickel.—We quote at 37¢ @ 42¢, according to size of lot, &c.

Tin Plate.—The event of the week has been the announcement that the wages dispute in the West has been settled, the Tin Plate workers accepting a reduction ranging from 12 1/2 % to 15 %. This will lead to a renewal of activity among the domestic works. The market, as a whole, remains in a condition of irregularity, although some improvement in inquiry is noted among the jobbing houses. Small orders have been rather larger in their aggregate volume, but the amount of business doing still lays behind the average for the season. The outlook is not regarded as presenting any features of special encouragement. Canners of most varieties of vegetables have had such poor return from their enormous packs of last year that they intend to curtail operations the coming season, and are, therefore, very indifferent buyers of Coke Plates. Fruit canners are in not much better shape, and meat canners are not enjoying enviable experience. Competition is keen and keeps prices low and irregular.

A special London cable dispatch of January 16 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate is without change for the better. Prices for Cokes are three half-pence lower. Business at the quarterly meetings was limited mostly to small lots. Reports went to show that the outlook is without improvement. Makers depend mostly on early reduction in workmen's wages to give relief. Present values do not remunerate. Buyers admit that prices are too low, but take no advantage of the cheap rates. One of the makers proposes raising prices by combine. Non-associated makers thought this not practicable, owing to possibility of increasing American competition. The large Eastern demand for Wasters continues. The quotations, f.o.b. Swansea, are as follows:

Bessemer Cokes, 1C 14 x 20.	@ 9/4 1/2
Siemens Cokes, 1C 14 x 20.	9/7 3/4 @ 9/10 1/2
J. R. Steel Cokes, 1C 14 x 20.	@ 9/10 1/2
Ternes, 20 x 28.	16 1/2 @ 27
Charcoals, 1C 14 x 20.	10/6 @ 12/6

Chicago Report.

Scrap.—Business continues quiet. Dealers quote their buying prices as follows, Chicago delivery:

	Per cent ton.	Per lb.
No. 1 Wrought Scrap.	\$7.00	...
Machinery Cast.	6.00	...
Malleable Cast.	5.50	...
Stove Plate (free of burnt).	4.25	...
Burnt Iron and Grate Bars.	3.00	...
Sheet Iron and Hoops.	2.00	...
Plow Steel and Breaking Stock.	4.00	...
No. 2, such as Shovels, Hoes, &c.	3.00	...
Old Boilers—whole (iron).	3.00	...
(Iron)—cut in single Sheets and Rings.	5.00	...
Old Gas-Pipes and Boiler Tubes.	5.00	...
Cast Borings.	3.00	...
Turnings.	4.00	...
Horseshoes.	7.50	...
Copper Bottoms.	6 ¢	...
Copper Clips and Heavy.	7 ¢	...
Heavy Brass.	6 ¢	...
Light Brass.	8 ¢	...

Pipe Lead.	2 1/2 ¢
Tea Lead.	2 ¢
Zinc.	2 1/2 ¢
Rubber.	4 1/2 ¢

Anthracite.—Very little business is reported by dealers and prices are not firmly maintained. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.	\$4.75 \$5.00
Milwaukee, Wis.	4.75 5.00
Kansas City, Mo.	4.75 5.20
Council Bluffs, Iowa.	7.95 8.20
Lincoln, Neb.	8.10 8.35
Sioux City, Iowa.	7.95 8.20
Aberdeen, S. Dak.	8.00 8.25
Dubuque, Iowa.	6.05 6.30
Madison, Wis.	6.25 6.50
St. Paul, Minn.	7.25 7.50
Burlington, Iowa.	6.25 6.50
Des Moines, Iowa.	7.75 7.95
Davenport, Iowa.	6.05 6.30
St. Joseph, Mo.	7.95 8.20
Leavenworth, Kan.	7.95 8.20
Omaha, Neb.	7.95 8.30

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.	\$8.00
Pueblo.	8.00
Colorado Springs.	8.00
Leadville.	8.00
Cheyenne, Wyo.	10.00
All points between Denver and Missouri River.	8.85

CONDITION OF THE

Hardware Trade.

DURING the past week a good many travelers have gone out in the interests of hardware, but it is as yet too early to hear from them to any great extent in the way of orders. Others will be entering the field during the next week or two, and under the stimulus of the efforts thus put forth there will undoubtedly be an increase in the volume of business. Some orders are now being received from jobbers and retailers, however, to complete their assortments, and there is a perceptible increase in the demand. These orders, with scarcely an exception, indicate that stocks are exceptionally light and in some cases broken. The trade, however, are buying carefully and are not at all disposed to speculate. The present month is one when a good many changes in discounts and lists are expected, but this year they were perhaps less than usual. Prices on Hardware generally are rather irregular and the tone of the market is not strong. It is, however, expected that there will be a good volume of business during the season, and the condition on the whole is referred to as showing continued, though not very rapid, improvement, which has characterized the market for some time.

Advices from Chicago.—The Shelf Hardware trade has opened up very satisfactorily with those houses whose salesmen are now out on the road. A few jobbers kept their men in a little later, and consequently have not yet begun to thoroughly feel the pulse of the trade. Country merchants, so far as they have been seen, appear to be in the humor now to stock up to some extent, and their orders are much better than at the beginning of last year. The demand covers all kinds of goods in straight Hardware, as well as staples. The situation is a little clouded, however, by the efforts of some local jobbers to move their staple goods a little faster by making especially low prices. Coming at this time the weakening in staple goods may have the effect of causing

buyers to hold off to see if the bottom of the market has been reached. Tinware and House Furnishing Goods are in particularly excellent demand. Orders are larger than for a long time and buyers are urgently requesting goods to be shipped promptly. The heavy Hardware trade has also opened up nicely and orders now coming in are well assorted. Collections are fair.

Notes on Prices.

Wire Nails.—There has been little change in the condition of the Wire Nail market during the past week. There is, however, increased inquiry and more orders have been placed, the volume of business being fair. There is little disposition on the part of the trade to purchase in a speculative way, although the prices ruling are conceded to be low. Small lots from store in New York are held at \$1.15.

Advices from Chicago.—Manufacturers report a considerable improvement in the inquiry and a very much better run of actual orders. The trade in districts outside of Chicago appears to be considerably larger than in this immediate vicinity. The jobbing trade has been considerably disturbed by the low prices made by one large house for private reasons. The usual jobbing quotation for carloads is \$1, f.o.b. cars Joliet, or \$1.05 for small quantities, but the house referred to has put this rate down to manufacturers' lowest prices for large lots.

Cut Nails.—The Cut Nail Market is quiet, though there is some increase in the volume of business. Prices are unchanged. Small lots from store at New York are held at 90 to 95 cents.

Advices from Chicago.—This trade is moving along in about the same fashion as previously reported. Orders are coming in moderately well, being usually confined to carload lots. Prices are unchanged at \$1 for small lots from stock.

Barb Wire.—The manufacturers of Barb Wire report some increase in the volume of business since the opening of the year, but trade on the whole is quiet. Prices are without change, but the tone of the market is not especially strong. Concessions which have recently been made are still being offered, and there are rumors of some sales at low figures. The market is represented by the quotation of \$1.80 to \$1.85 for Four Point Galvanized, in carload lots at mill.

Advices from Chicago.—Manufacturers' orders, so far as can be learned, have been of a moderate character only during the week and prices are running the same as previously. The standard makes of Barb Wire appear to be completely unaffected by the low prices made by one concern, which has had occasional notice in these reports. Jobbers are making regular quotations of \$1.60, f.o.b. cars Joliet, for carloads of Painted, and \$1.95 for Galvanized, but a large local jobbing house has introduced the same policy in the Barb Wire trade as above referred to in the Wire Nail trade, and is making a cut to actual manufacturers' prices.

Skate Sharpener.—The Skate Sharpener illustrated in our last issue as put on the market by Banker & White, George M. Mattoon, agent, 111 Duane street, New York, is sold to the trade at \$1.75 per dozen and \$18 per gross.

Can Opener and Cover.—The Eclipse Can Opener and Cover, made by the Brooklyn Novelty Company, 1055 Madi-

son street, Brooklyn, N. Y., of which an illustrated description was given in our issue of January 12, is designed to retail for 10 cents each and is sold to jobbers at \$7.50 per gross. The manufacturers state that with care the opener and cover will last an almost indefinite time.

Binder Twine.—The Binder Twine market is characterized by a lack of activity. Buyers as a rule are holding off, although a good many orders have been placed. Manufacturers of twine outside the Trust are not, as a rule, pushing the manufacture or sale of their product, but are rather awaiting the results of the marketing, by the Western Twine Company, of the several thousand tons of Binder Twine which has been held by bankers as collateral, and which was not disposed of last season. Some of those familiar with Binder Twine express doubts as to the value of held-over Twine in comparison with that of this year's make. The market is in an unsettled condition regarding prices, and quotations from the representatives of various factories show quite a range for the same class of goods. The market is represented by the following quotations, the extremes, as a rule, indicating the difference in cost between car lots and less than car lots; in some cases, however, the lowest and highest prices are made for the same quantity of twine by different manufacturers:

Sisal, 5 to 5½ cents per pound.

Standard, 5½ to 6½ cents per pound.

Manila, 6 to 6½ cents per pound.

Pure Manila, 7 to 7½ cents per pound. Manufacturers agree that there is little or no money in making and selling Twine at present prices, and prefer to utilize their plants for the manufacture of rope. This feeling is so pronounced that one factory proposes working their Twine up into rope, rather than market it at lower prices than those ruling. Any advance or decline in the price of raw material will affect the price of Binder Twine, as the prices for the finished product are based upon the cost of fiber.

Eave Troughs.—We present below the revised price-list adopted at the first regular meeting of the United States Eave Trough and Conductor Pipe Association, held at Cincinnati, January 9:

Galvanized Lap Joint Eave Trough.		Per foot.
No.	6-inch girt.	
3.....	7	\$.14
3½.....	8	..16
4.....	9	..18
5.....	10	..19
6.....	12	..23
7.....	14	..27
8.....	16	..30

Slip Joint, 1 cent per foot higher than Lap Joint.

Double Bead, 3 cents per foot extra and must have 2 inches more girt.
For heavier than No. 28 gauge add following: Nos. 27, 1 cent; 26, 2 cents; 24, 4 cents; 22, 10 cents; 20, 18 cents.

Tin Eave Trough.		1C Terne.	1X Terne.
No.	6-inch girt.	Per foot.	Per foot.
3.....	7	\$.08	\$.09
3½.....	8	..10	..11
4.....	9	..12	..13
5.....	10	..14	..15
6.....	12	..16	..17
7.....	14	..18	..19
8.....	16	..20	..21

Slip Joint, 1 cent per foot extra.

No change in list price on Conductor Pipes and Eave Trough Mitters.

Wringers.—The following are the prices of the National Wringer & Mfg. Company, Canton, Ohio, on the line of Wringers which they are putting on the market. Terms 60 days, 2 per cent discount for cash in ten days:

Per dozen.	
No. 20, Erie, 10-inch.....	\$22.50
No. 30, " " " ".....	25.00
No. 40, King, 11 " ".....	27.00
No. 2, "77," 10 " ".....	13.75
No. 2, Zenith, 10 " ".....	14.00
No. 3, " " " ".....	18.00
No. 4, " " " ".....	21.00
No. 40, Prime, 10 " ".....	19.00
No. 50, " " " ".....	16.75
No. 60, Columbia, 11 x 1½ inches.....	26.10
No. 99, Pittsburgh, 11 x 2 inches.....	29.00
No. 45, King, 10-inch.....	24.50
No. 65, " " " ".....	32.00

The company quote their Daisy Rat Trap at \$8.50 per gross.

Stove Bolts.—The market for Stove Bolts has for some time been somewhat irregular, and at a meeting of the manufacturers last week a reduction of 10 per cent. was made in the price. The quotation on these goods is now 70 and 10 per cent. discount.

Tinware.—There are some indications of an understanding between the manufacturers of Tinware, as there is more uniformity in prices, some of them quoting substantially the same figures. The market in this line is deserving the careful attention of the trade, as it is regarded as not unlikely that prices may be somewhat higher, and already it is intimated that some extreme quotations have been withdrawn.

Double Pointed Tacks.—The manufacturers of Double Pointed Tacks have recently been conferring, and as a result the market has a better tone, with a slight advance in prices.

White Lead.—The market is in somewhat uncertain shape and disturbed more or less by foreign competition, present and prospective. There is also some difference of opinion regarding the attitude of home producing interests that tends to complicate matters more or less. Naturally, large buyers proceed slowly in the matter of placing orders and the smaller trade buy moderately, as usual at this season of the year. List prices remain unchanged, and terms are also as they have been for some time past. There are rumors, however, of "cut rates" in some sections and of very low quotations on certain of the better class of mixed Lead.

Old Metals.—Business is quiet and prices somewhat irregular, depending largely on actual requirements and the desire of holders to sell. The following quotations represent the current rates paid by dealers in this city:

Heavy Copper.....	lb 7 c
Light and Tinned Copper.....	lb 6½ c
Heavy Brass.....	lb 4½ c
Light Brass.....	lb 3½ c
Lead.....	lb 2½ c
Tea Lead.....	lb 2½ c
Zinc.....	lb 2½ c
No. 1 Pewter.....	lb 10 c
No. 2 Pewter.....	lb 5½ c
Wrought Scrap Iron, gross.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross ton 7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rags, Paper, &c.—Demand is fair and dealers' purchasing prices substantially the same as those quoted last week, namely:

No. 1 White Rags.....	lb 3 @ 3½ c
No. 2 White Rags.....	lb 2½ @ 2½ c
Mixed Rags.....	lb 1½ @ 1½ c
Blues and Sds.....	lb 1½ @ 1½ c
Hard Sized Mixed Rags.....	lb 1½ @ 1½ c
No. 1 White Book Shavings.....	lb 1½ @ 1½ c
No. 2 White Book Shavings.....	lb 1 @ 1½ c
Light Book Shavings.....	lb 1 @ 1½ c
No. 1 Mixed Shavings.....	lb ¾ @ ¾ c
No. 2 Mixed Shavings.....	lb ½ @ ½ c
No. 1 Printed Books.....	lb 1 @ 1½ c
Ordinary Mixed Books.....	lb 1 @ 1½ c
Newspapers.....	lb 2½ @ 2½ c
No. 1 Manila Paper.....	lb ¾ @ 1 c
No. 2 Manila Paper.....	lb ¾ @ ¾ c

Bogus Paper.....	lb ¾ @ ¾ c
Common Paper.....	lb ¾ @ ¾ c
Straw Chips.....	lb ¾ @ ¾ c
Binders' Clippings.....	lb 1½ @ 1½ c
Jute Butts.....	lb 1 @ 1½ c
No. 1 Jute Bagging.....	lb ¾ @ ¾ c
Mixed Bagging.....	lb ¾ @ ¾ c
No. 2 Bagging.....	lb ¾ @ ¾ c
Hemp Twine.....	lb 2 @ 2½ c
Manila Rope.....	lb 2 @ 2½ c
Jute Rope.....	lb 1½ @ 1½ c
Mixed Rope.....	lb ¾ @ ¾ c

Old Rubber.—Business has eased off somewhat, and prices are rather weaker. The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, gross.....	\$0.03½ @ .04
Rubber Shoes, carloads, delivered at factory.....	@ .05½
Rubber Shoes, less than carloads.....	@ .04½
White Wringer Rolls.....	@ .03½
White Syringes.....	@ .03½

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THE METAL WORKER.

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Convention of Heating Engineers.

The first convention of the American Society of Heating and Ventilating Engineers, which was held this week at the house of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York, was in every way a success. The attendance was large and representative. The papers submitted were of a high grade and secured close attention. The subjects for topical discussion were varied in scope, and the experiences related in discussing them were of an instructive character. The business of the society, as well as the discussion, was carried on with dignity, and a deep interest was manifested in establishing the society on a basis that would insure its permanency. A reading of the proceedings, which appear elsewhere, will enable an opinion to be formed as to the probability of success on this point. The society gives great promise of being very useful, and it has the best wishes of many friends for a long life.

Gumption.

How expressive is the word gumption, how evident in its meaning and yet how almost indefinable! Certainly it is skill, it is cleverness, it is sagacity, but it is more than one or all of these. Perhaps the skillful application of common-sense or the common-sense application of skill will define it. At all events it is assumed to be one of the characteristics of the true born Yankee and is an intangible something that turns failure into success. To a large degree a man of gumption is born, not made, but there is nevertheless ample opportunity to acquire this trait so desirable to the artisan. It can come only by perseverance and determination. It has nothing to do with a give-up-at-once spirit, which is displayed by so many individuals the moment they en-

counter an obstacle. One or two instances may serve to illustrate. A certain sheet iron worker was sent out to erect a system of galvanized iron piping. Running against a snag, he returned at once (some 50 miles) to see what he should do. His course was pointed out to him by the foreman in a somewhat emphatic manner and he returned to his work fully confident that he knew just what to do; but no sooner did he undertake it than his understanding deserted him, he could neither understandingly remember nor practically apply the instructions given and returned to the shop a second time. Very naturally he was kept at home (what was said to him need not be mentioned here). A substitute was sent, however, and upon his departure was asked what he proposed to do. His reply was that "he proposed to fix it," and fix it he did. He was by no means a better workman than the first, but he possessed a faculty which his predecessor absolutely lacked.

Horse Sense.

Again, a man was sent out upon the same kind of a job, and finding something to prevent his putting it up as originally designed, immediately telegraphed home that he could do nothing, as things were wrong. But he neither informed them wherein they were wrong, nor did he start for home and straighten things out, but actually waited until some one else had followed it up and settled the difficulty. Horse sense, as something akin to gumption, would appear to have been the missing faculty in this case. Doubtless no class of men has been called upon to exercise the most consummate gumption at shorter notice or under more trying circumstances than the old time millwrights. An entire mill might be shut down until their work was completed. The work must be done with the greatest haste, and yet it must be well done. All of a man's resources must be called upon, experience first and then ingenuity. And wonderful things have these men of gumption accomplished with the crudest of material and appliances. The mechanic of to-day may well admire their work and seek such a reputation for true gumption as they possessed.

Future Tanners.

A salesman who had served an apprenticeship as a plumber was very positive in his assertion that in the near future tinsmiths would be in greater demand than plumbers. His reason for the assertion was that innumerable boys were

learning the plumbing and other trades and none were learning to be thorough, competent tinsmiths. He dilated on the fact that no small intelligence was required to be a tinsmith who could cut a pattern for any job that came to hand, and stated that in tin work a fine show of handicraft could be made. In the matter of variety of work presented, he thought no trade called for a greater amount of good judgment and widely adaptable characteristics. The tinsmith must be a good roofer, working to the best advantage in time and material, and through being a master of the art make roofs that would stay on without leaks or repairs. This same man must work sheet iron of all gauges with facility into stoves, furnaces and their many attendant requisites, besides knowing all about how to do a job that would give a strong heat and satisfaction. Without having any practice, as in old times, in making tinware, he must make neatly odd shaped vessels of a given capacity for special requirements, necessitating calculations that would puzzle a schoolmaster. It takes years to make a tinsmith, and it is always some new problem in head or hand work or policy that is being presented. Men who fill the bill thoroughly have acquired the wisdom and patience of a philosopher. The young man, however, who considers the trade of tinsmithing thoroughly will either be fascinated with its problems, or, disgusted with the demands that will be made upon mind and muscle, he will turn to some business where for the same or a smaller investment he can reap a greater remuneration.

Steps are being taken for the equipment of two short lines of the New York, New Haven & Hartford Railroad system with electric motors. The two lines are the Nantasket Beach and the Warren & Bristol, and if the experiment proves a success it is understood that electricity may largely supersede steam as the motive power on the railroad at no distant date. The current for these lines will be supplied by power houses—one located at Warren, which will run the cars from Providence to Fall River, including the Bristol branch, and another at Westport factory on the New Bedford line. Both open and closed cars will be used on this line, which is 35 miles in length, and when completed will be the most important and thoroughly equipped electric road in the country.

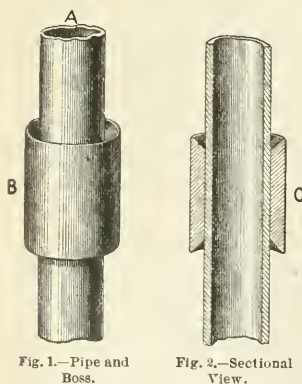
Appeals for aid are made on behalf of the settlers in North Dakota and Nebraska who are, in many places, entirely destitute, on account of the failure of their crops. Thousands in that section of the country are said to be starving and freezing for want of food, fuel and clothing.

THE LETTER BOX.

Brazing Cast Brass.

From S. E. B., *Chicago*.—I want to find out how to brase a cast brass boss on to a 2-inch wrought iron pipe. The boss is heavy brass and it is to receive a $\frac{1}{2}$ -inch cock. It is a job on a locomotive and has to stand steam. I have tried to do the work with spelter in the following way: I first filed the brass and iron pipe, then put the boss in place and bound it with a piece of heavy wire; then put in a forge with a clean fire, got up a heat and applied the spelter with borax, but it did not hold. The spelter did not melt, though I gave it pretty nearly a red heat. I thought it was hot enough, as spelter is supposed to melt at 467° . Is there more than one kind of spelter?

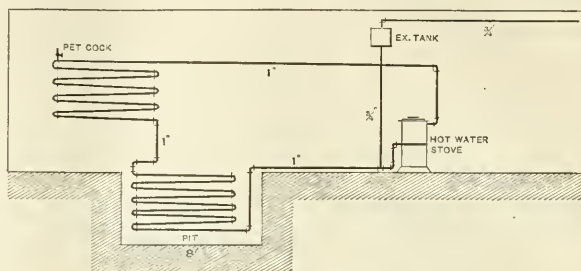
Answer.—We submitted this letter to John Fuller, Sr., author of the "Art of Coppersmithing," who writes as follows: The above inquiry, as is often the case, is very indefinite, and leaves us to guess where the difficulty is. There are so many mixtures called brass, and things called bosses, that we are from the nature of the case compelled to use our imagination and assume a form for the boss as well as its position



Brazing Cast Brass.

on [the] pipe. We will first consider the boss. To successfully brase or solder this boss the spelter should be made to suit it or the composition of the boss to suit the spelter. The ordinary solder is composed of 16 parts copper and 12 of zinc; therefore it is necessary the boss should have enough more copper in its composition to allow the solder to run free and easily on it without fear of fretting. If the boss is already supplied it should be tested by trying to run some of the spelter on it before it is placed in position for brazing. If it requires more heat than the boss will stand without fret-

ting, then lower the solder until it will run readily. (Complete directions are given for doing this at page 248 in my work, "Art of Coppersmithing.") When the boss and solder have been tested and both proved satisfactory, the boss should then be prepared for the soldering. To illustrate: Let A, Fig. 1, represent a 2-inch iron pipe and B



Will it Circulate?

the boss 6 inches long and $\frac{1}{4}$ inch thick. Now clean the pipe free from scale, and have the boss bored out so that it will fit the pipe tight, and have a channel or countersunk made at each end of the boss $\frac{1}{4}$ inch deep, as shown at C, Fig. 2, leaving the outer edge of the boss about $\frac{1}{4}$ inch thick. Now stand the pipe securely in a convenient place near to the blast and proceed to set the fire pot as shown on pages 178 and 179 of the "Art of Coppersmithing" and proceed as there directed. If a boss or a brass elbow is to be placed on the end of the pipe, then the weight of the pipe should be taken off by slinging to a chain, as shown on page 181. It would seem from the correspondent's letter that he did not apply sufficient heat to run his spelter, or was afraid the boss would not bear the heat necessary, hence his failure. This can always be avoided by testing the quality of the things it is desired to solder with spelter, and then lowering the solder to suit when necessary, or by raising the quality of the brass to be operated on. If the above suggestions are acted on with ordinary ability success must follow. We shall be glad to hear from "S. E. B." again on this subject with details as to his success.

Evans Hot Air Furnace.

From J. J. B., *Philadelphia*.—In answer to "B. C." New York, whose inquiry appears in *The Metal Worker*, January 5, the Evans hot air furnace is made by Evans & Co., Twelfth street, below Spring Garden street, Philadelphia.

Will It Circulate?

From F. D., *Salem, Mass.*—Will some reader of *The Metal Worker* please inform me if a hot water job as shown in the sketch will work, or if there is any better method of piping the job than that shown in the diagram? What I am trying to get is a coil under a printing press so as to keep the ink rollers warm, having the heater on the floor

above the pit at one side. I wish the water to circulate through the coil in the pit after passing through the coil on the wall.

Flux for Soldering Zinc.

From C. M. W., *Spencerport, N. Y.*—In reply to "C. S. Z." whose letter appeared in *The Metal Worker* of January 19, would say that for new zinc that is not corroded in the least tallow makes an excellent flux. It can be wiped off the work whils warm and will not corrode the metal if left on. I hope this will help some of the readers of the Letter Box, from which I have often got assistance.

From A. L. JAMESON, *Warren, Ohio*.—If "J. S. Z." of Richmond, Ind., whose inquiry appeared in *The Metal Worker* of January 19, desires, I will send him a sample of flux for soldering zinc and galvanized iron or for tinning black iron that will not discolor the work nor hurt either hands or clothing, for there is no acid in it.

Newark Parlor Stove.

From L. R., *West Troy*.—Will some one tell me who makes the Newark parlor stove No. 53? I have a catalogue of 8000 stoves made in the United States, but the one mentioned above is not in it. There is a Newark stove made by G. H. Phillips & Co., but that is not the one.

Boat Builders' Steam Box.

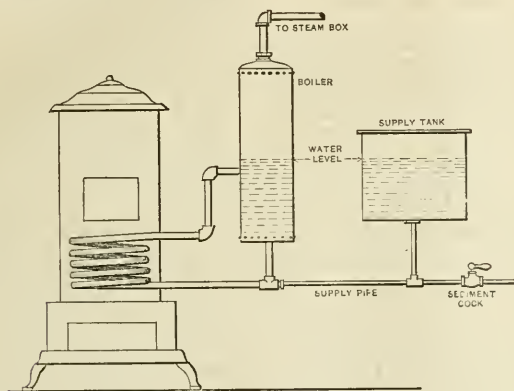
From B. R. C., *Moriches, N. Y.*—I give herewith a diagram of an apparatus for the purpose of generating steam for a boat builders' box, and I would like to know if it is constructed on the right principle for the purpose. I argue

that it is, but it has failed to give satisfaction. The stove has a coil in it made of 20 feet of $1\frac{1}{2}$ inch pipe connected to the boiler. The boiler is about 8 inches in diameter and 24 inches in height, connected with the heating coil by $1\frac{1}{2}$ -inch pipe. The water is taken to the boiler from a supply tank through a $\frac{1}{2}$ -inch pipe. The cause for complaint is that the water in the supply tank boils, to which the owner objects. I have suggested that by placing a check valve in the $\frac{1}{2}$ -inch supply it will stop the trouble and add to the efficiency of the apparatus in generating steam. To this he objects, as he thinks it would make but little difference in the steam generation and would prevent him from drawing water off through the sediment cock to prevent freezing. I shall be glad to receive some explanation as to how to overcome the trouble.

Answer.—There is much more surface in the heating coil than is needed to make steam in a boiler of the dimensions given. A check valve will relieve the trouble. By using a draw off cock on both sides of the check valve the

nies get together. But the stove and implement manufacturers went to work with a will, and brought to their assistance allied business interests throughout the whole section affected by the proposed increase. Some of the manufacturers also laid aside their private business for the time and devoted their entire attention to the task of winning railroad managers to see the question from the standpoint of railroad patrons. The arduous service rendered by these individuals will perhaps not be appreciated by very many of their trade colleagues, but it was effective in securing final action. The benefit of this achievement is not merely confined to the settlement of the one question involved, but is likely to be felt in the future. The railroad companies will probably consider much more carefully any proposed readjustment of freight charges or changes of classification on stoves and agricultural implements.

Immediately interested had dropped everything else for a time in order to handle this one matter effectively. Other grievances exist which should not be endured, and perhaps in every case it will be found that the only reason why they continue is because insufficient pressure has been brought to bear upon the officials who are responsible for them. The rate on coke from the Connellsville region to Chicago is a grievance of particularly long standing. Freight rates on other commodities have fallen, but this rate has stood immutable for years and years, as though fixed by some power higher than that of man. Although every foundryman in the Northwest is directly interested in the question of coke freight, it is left to the attention of the few pig iron producers. A reduction of 10 cents per ton is expected on February 1, it is true, but this is merely a sop which might have been made an important concession if a more vigorous policy had been inaugurated and followed up unrelentingly by the consuming interests and allied trades. If the matter of freight rates were capable of exact adjustment on some definite or comprehensible system which was being rigidly followed, agitation of this character would not be needed. But as long as they are fixed arbitrarily, the patrons of the railroads must be more than watchful of their own interests. They should be persistently aggressive.



Boat Builders' Steam Box.

apparatus can be drained. The arrangement of the plant seems to be correct. Comments from our correspondents are invited.

Railroads and Manufacturers.

The satisfactory adjustment of Western freight rates on stoves and agricultural implements, says *The Iron Age*, furnishes manufacturers in other lines an impressive example. Here is an instance in which determination and persistence have overcome the stubborn decision of not a few, but a large number, of railroad managers to advance freight rates. To secure the reconsideration of a step which had been formally ratified by one of the most important railroad associations of the country was a formidable undertaking. It was necessary to convince a majority of the railroad companies composing the association of the injustice of the proposed changes. Then a special meeting had to be called, at which the matter was again discussed, with the chances in favor of a change of heart after the representatives of the railroad compa-

ny let the same untiring, unrelenting policy be pursued with regard to other grievances from which manufacturers are suffering at the hands of railroad companies. The assistance of friendly interests should be invoked in order to bring about as great pressure as possible, so that every day will be a burden to the railroad manager who persists in unjustly treating manufacturers. A special case in point is that of the freight rates on tin plate. The discrimination in favor of foreign tin plates should be the subject of continuous attack. The railroad companies participating in the establishment of a low through rate from Swansea to interior American points should be compelled to face the consideration of this question every day until they conclude to give American tin plate manufacturers fair treatment. An occasional newspaper article or an occasional letter to a railroad company will help to agitate the question, but it will not accomplish the purpose sought, and that is a complete reversal of the practice. Perhaps the damage which it is doing might have been checked long ago if a few of those

In a paper lately read before the British Royal Society, J. H. Gray and J. B. Henderson state that the density of a well annealed copper wire of 98 per cent. conductivity decreased about $\frac{1}{2}$ per cent. if stretched 25 or 26 per cent. A lead wire also decreases about $\frac{1}{2}$ per cent. just before breaking. A copper wire drawn through 12 holes of a draw plate increases in density more than 1 per cent. A manganese copper wire—10 per cent. of manganese—increases in density about 1 per cent. when drawn down to half its former diameter.

A Light and Heat Exhibition is to be opened in London next May. It will be located at Woodhouse Park, Shepherd's Bush, and all methods of heating and lighting will be illustrated. A historical gallery will furnish examples of lighting and heating from the earliest ages up to the present time.

The serious depreciation which has taken place of late in the values of agricultural products is reflected in an official statement recently published, which gives returns from 62 counties in Ohio showing that 1,000,000 acres of land changed hands last year, at a decrease of \$3,000,000 from the preceding year's valuation, and that mortgage indebtedness in the same district increased 65 per cent.

The East St. Louis and St. Louis Bridge and Construction Company have been incorporated, with \$500,000 capital, to build another bridge across the Mississippi River.

STEAM AND HOT WATER.

First Annual Convention of the American Society of Heating and Ventilating Engineers.

TUESDAY MORNING.

The first annual convention of the American Society of Heating and Ventilating Engineers was held in the auditorium of the Mechanical Engineers' building at 12 West Thirty-first street, New York, on January 22. At 11.15 President E. P. Bates called the meeting to order, the following members being present or arriving later:

Henry Adams, Washington, D. C.
 Hugh J. Barron, New York.
 Edward P. Bates, Syracuse, N. Y.
 J. J. Blackmore, New York.
 B. Harold Carpenter, Wilkes-Barre, Pa.
 Geo. B. Cobb, New York.
 Albert A. Cryer, New York.
 A. C. Edgar, Philadelphia.
 John A. Fish, Boston, Mass.
 Frank W. Foster, Boston, Mass.
 James A. Harding, Boston, Mass.
 L. H. Hart, New York.
 Alfred A. Hunting, Boston, Mass.
 Stewart A. Jellett, Philadelphia.
 Major H. E. Light, Saginaw, Mich.
 W. M. Mackay, New York.
 Wm. McMannis, New York.
 Percival H. Seward, New York.
 J. R. Wendover, New York.
 J. J. Wilson, Baltimore.
 W. A. Russell, New York.
 Jos. M. Stoughton, New York.
 Le Roy B. Sherman, New York.
 W. B. Wilkison, New York.
 T. B. Cryer, New York.
 Wm. H. Hill, New York.
 Samuel Burns, New York.
 C. C. Lincoln, New York.
 W. J. Baldwin, New York.
 N. P. Andrus, Brooklyn.
 Chas. S. Onderdonk, Philadelphia.
 Chas. S. Hopkins, Rochester, N. Y.
 A. G. Paul, Boston.
 A. J. Doty, New York.
 Geo. T. Weymouth, Jr., Scranton, Pa.
 W. H. Oakes.
 Walter Pendleton, New York.
 C. S. Graves, New York.
 W. H. Clark, Lebanon, Pa.
 D. M. Quay, Chicago.
 B. F. Stangland, New York.
 Thomas Barwich, New York.
 Robert Munro, Chicago.
 J. G. Dudley, New York.
 E. R. Burroughs, Geneva, N. Y.
 D. U. Cory, New York.
 C. B. Boynton, New York.
 W. H. Dewey, New York.
 Fred P. Smith, New York.
 Wm. P. Skiffington, New York.

Thomas McNeill, New York.
 Judson A. Goodrich, New York.
 Albert A. Cary, New York.
 N. A. Boynton, New York.
 F. A. Herendeen, Geneva, N. Y.
 T. Joy, New York.
 C. F. Hauss, New York.
 J. L. Wells, New York.

After disposing of the minutes, President Bates delivered the following address:

President's Address.

Gentlemen, Members of the American Society of Heating and Ventilating Engineers: I welcome you to this our first annual meeting. The purposes for which this society was formed are commendable in every respect. If we carry out the wise provisions which are named in the preamble to our constitution and by-laws we shall become public benefactors. We need to look backward but a very few years to find that our profession was unknown. The rapid strides of modern civilization have created many new professions, and ours among them. There is a wide field open before us, and it yet remains to be seen how well we will occupy it. The child is born, and it gives great promise of a grand future. I notice the following in the third clause of the preamble: "The maintenance of a high professional standard among heating and ventilating engineers." This is the proper basis on which to found this society. In order to carry out these sentiments we need to gather about us men devoted to the work, men of character and reasonably ambitious of success; men who will think, study and work until they see the fruition of their hopes. We need also in this infantile state to avoid adding to our number any who are not already engineers in our acceptance of the word. In a new society there is always a temptation to get numbers. This is commendable provided you confine your efforts to those fully qualified to associate themselves with you; those whose interests are identical with yours. I would prefer to work with a society that only counted ten members, and that ten fully banded together for a purpose, than to number a thousand and have divided interests. Many of us are still interested in contracting and mechanical construction. But as eligible members of this society, we can well afford to lay that aside for a day and look at heating and ventilating from a professional standpoint only. I now charge you as you love the cause in which you have so recently launched your bark to look well to your applications for membership, as the growth and perpetuity of this society rest upon this fully as much as on any other proposition. In regard to legislation which may in future be shaped by this society, I would say that the field is broad and but little occupied. The State of Massa-

chusetts seems to have taken the initiative in enacting wise laws regulating the construction and ventilating of public buildings. Those laws are too voluminous to quote from at this time, but I would suggest that each member possess a copy of them, and become thoroughly familiar with their text. I believe that we should not cease our labors when public buildings are thoroughly warmed and ventilated, but our zeal for a good cause should eventually take us into every building which shall be constructed for any purpose. When any class of men have given continued study to a certain subject and have evolved a practical line of action it is not the time to sit idly by and fold their hands in self complacency, but this knowledge should be given to the world, forced on them against their will possibly in the beginning, but received with gratitude when the service is partially appreciated. There are cases where factories and workshops are fairly well ventilated, but in comparison they are rare. This is not always because the owner is unwilling to ventilate his building, but usually because he has not given the subject any attention. He is probably engrossed in the details of his business and would not know how to begin if he wished to ventilate his building. At this point a member of our society could render him an important service. There is another class of buildings which need our attention, but so far as I have been advised have been largely overlooked as of little consequence; I refer to the tenement houses in our large cities. You may hold that in the majority of cases the occupant does not desire any ventilation, but this does not affect the merits of the case. We should take the matter in hand and bring out a system which will be for the good of the masses. Every family has the right to have an abundance of good fresh air, even if they are not aware of their right. I hereby suggest that this be one of the first problems which we handle, and if possible we secure such legislation as will compel every person or corporation who shall in future erect a tenement house to connect each room to an individual ventilation shaft to be not less than 8 inches in diameter inside, round in form and preferably of glazed tile built in the walls of the building. You may think this a trifling matter, but I assure you that if we as members of this society accomplish this much within the next ten years and do not make any advance along any other line we shall have achieved a glorious return for our labors. We shall find, however, that we cannot labor for those of our race who live in the most humble homes without having our work rebound to the benefit of the entire race. Ventilation comes next to godliness and must necessarily precede the manifestation of the latter. So I hold that in the next decade one of the human benefactors will be the men or the body of men who make it possible for their fellow men to be more cleanly in their surroundings. Our work, however, will not stay with any class; it will benefit all classes, and the amount of benefit received will be commensurate with the

labor expended upon it. In order to carry out all the objects of this society we shall need first the hearty co-operation of all its members; we shall need further a practical and intelligent devotion to the purposes for which we are organized. With these points carefully covered by each member, there is a work before us which never has been thoroughly done, but will be accomplished by the members of this society to their credit and the good of the race.

Report of Secretary.

Secretary L. H. Hart then read a report stating that there was a membership of 75, a number of new members to be voted on and a number of applications had been received. The preliminary work has been well done and the correspondence demonstrates that the success of the society is assured.

Report of Treasurer.

In the absence of the treasurer, J. A. Goodrich, who sent a letter of regret, his report was read by the secretary, showing that he had received \$750, had paid out \$250 and had a balance on hand of nearly \$500.

Letters of Congratulation.

Letters of regret for their absence, wishing success to the society, and suggesting topics of interest were read by the secretary from Henry B. Prather, Buffalo, N. Y.; J. H. Kinealy, St. Louis; John Gormly, Philadelphia; James Mackay, Chicago; H. D. Crane, Cincinnati, Ohio; C. W. Light, Saginaw, Mich.; James R. Willett, D. M. Quay, Geo. D. Hoffman, Chicago, and John H. Petherick, Chattanooga, Tenn.

Board of Managers' Report.

In the absence of the chairman, Fred. P. Smith, a brief report was made by W. M. Mackay, who recounted the preliminary labors of the board for the meeting, and stated that a committee had been appointed to collect information, with a view to recommending legislation to provide proper laws to govern heating and ventilation.

The chairman of the council being absent no report was made.

Nominating Committee.

The president appointed a committee to nominate officers for the coming year, composed of Hugh J. Barron, James A. Harding, F. W. Foster, Albert A. Cryer and Henry Adams, with instructions to report at the next morning session.

The president then announced that the papers would be read, and in the absence of Prof. J. H. Kinealy of St. Louis the secretary read his paper on "Determining the Heating Power of Heating Systems," which is printed in full in another column.

J. J. Blackmore suggested that the premises of the paper were important, and in reference to steam met his views, but that the hot water standard was different from his experience. He urged that each member should en-

deavor, while the weather and season were propitious, to prove the value of the tables presented. In the absence of the writer of this paper it was laid over to be taken up at any time the members cared to call it up for further discussion. The next paper taken up was read by J. J. Wilson and was entitled, "A Short Talk On Hot Water Radiators." We reprint this in full elsewhere.

This paper was freely discussed by John A. Fish, James A. Harding, W. M. Mackay, Hugh Barron and Percival H. Seward.

While it was yet under discussion a recess was called until 2.30 p.m.

TUESDAY AFTERNOON.

The president called the convention to order at 2.50 p.m., when telegrams were read from T. J. Waters, Chicago, and H. B. Prather, Buffalo, after which the members began the consideration of the topics for discussion. The secretary read the first topic: "In designing a system of heating and ventilation, shall we heat by radiation and supply only tempered air for ventilation, or shall we heat by air supplied for ventilation?"

C. S. Onderdonk favored simple systems.

Stewart A. Jellet mentioned several plans using tempered air with advantage, but thought that combination systems were better. Mr. Jellet then read a paper prepared by him on "The Heating and Ventilating Engineer—A Commercial View," which is given in full elsewhere in this issue.

C. E. Onderdonk expressed himself as thoroughly in accord with this paper.

H. J. Barron asked how the evil could be cured, then stated that he doubted if it could be, and thought it would have to be endured.

Mr. Jellet stated that he had been asked by architects to furnish plans and specifications free of cost, who stated that they did not intend to pay. This had been met with refusal to work for nothing. Now his firm are superintending the construction of \$400,000 worth of work, and their engineering department paid the best profits of their business and this branch of their business is growing. Major H. E. Light spoke earnestly on the advisability of plans being prepared by engineers of ability and suggested that contractors refuse to bid for large work when the plans were not prepared by engineers of known ability.

Chas. S. Hopkins expressed his opinion that this was a question of wages that would always be governed by the competition for the work.

J. J. Blackmore hoped that a preliminary step would be taken toward securing pay for engineers' services.

President Bates left the chair to speak on this topic. He held that service was just as much material to be paid for as the apparatus used. One point that

had not been touched was the valuation put on the service by the engineer and it seemed that there was a fear that a charge for service would be opposed or the amount reduced. Fault could not be found with the owner if the engineer hesitated in his demand for a fee. If a plan was furnished that was clearly valuable and objection was made, no discouragement should be felt. He thought it probable that all could be benefited by more study of the art, then less difficulty would be experienced in collecting a fee for the service rendered. The evil, as it has been called, is susceptible of being cured, but is largely a work for individuals rather than collectively.

Another member stated that he believed that the stumbling block was largely the practice of boiler makers furnishing plans without limit.

The second topic for discussion was then taken up: "In a plenum system of heating and ventilation, which is the better for the air ducts, 'off and on' hot and tempered air dampers, or 'mixer' dampers?"

Major H. E. Light preferred the "off and on" system.

Charles S. Onderdonk stated his experience was against the "off and on" system.

J. J. Blackmore favored mixing damper.

The third topic was, on motion, deferred until after the reading of the paper by R. C. Carpenter. Topic No. 4 was then discussed: "The necessary size of risers for a given amount of heating surface for the different sizes of pipes and coils and for different classes and sizes of radiators."

H. J. Barron stated that the practice of making the return pipe one size smaller than the supply was common, but he could see no reason why it should not be one-half the diameter.

Stewart A. Jellet stated that good rules were known on this practice.

James A. Harding stated that W. J. Baldwin was present and he thought the members would be glad to hear from him. [Applause.]

Mr. Baldwin said he would hesitate to use a $\frac{1}{2}$ inch pipe to return from a $\frac{1}{4}$ inch pipe. As the pressure was reduced as the boiler became distant and friction increased, it was not best to reduce the return too much, and that the old rule was a good one.

At the request of some of the members, topic No. 6 was taken up: "The Probable Future of Electrical Heating."

Mr. Jellet hoped to learn something on this method of heating, as it was necessary that the society should know about this branch to be abreast of the times.

L. H. Hart then gave some information on this subject, but thought, owing to the cost, the heating engineer of today would have little call to prepare heating plants on this system. He sub-

mitted the following letter from W. S. Hadaway:

It is quite impossible to state in a few words the relation of electric heating to present methods, as the collateral advantages in every specific application are determining factors, as well as cost of the heat unit *per se*. In room heating on a large scale a close figure for use is that 1 electrical horse-power hour will heat (the heat being derived from electrical resistance solely) 7.5 square feet of common radiating surface 135° F. above room temperature. You can readily see how far 100,000 horse-power will go when used in this way. It is in combination with present low temperature methods of heat distribution that I look for the greater uses of electricity in heating. Of course in good practice 50 per cent. of the fuel energy is not too much to expect from steam heating on a large scale. We find in practice that few examples of high temperature heating show a fuel economy exceeding 50 per cent. But by combining the steam for low temperature distribution with electricity for the high temperature distribution, we can obtain figures high enough in fuel economy to more than offset the increased fixed charges for plants, &c., and secure heat energy in a form readily increased in capacity of close regulations and temperatures from maximum downward. I think this method can be illustrated by citing example of an apartment house. The house is equipped with boiler and electric plant for lighting. The rooms are warmed by steam and the water is heated by the same means. Electricity is used for lamps, arc or incandescent, ovens, broilers, fat fryers, and irons, in short for every purpose excepting temperature, at which steam heat is usually applied. This means in practice two profits from the fuel. The electrical load described is obtained from live steam, and all the present live steam uses are replaced by exhaust. In other words, the electric plant is merely a high temperature factor, and its use leaves the energy of steam available for the present uses. It is needless to bring before you the advantages of such a system, as they are too apparent. The main feature to be brought out and emphasized is that the installation consists of two factors: First, a high temperature or heat potential system in which the electric plant is the means of generation and transmission, and a low temperature heat potential system, in which steam, either live or exhaust, is the means of generation and transmission, and in practice we cannot obtain the high potential system except from water powers and gas engines without the low potential system. I want to extend the scope of the heating engineer to cover the electric plant. By so doing, a greater aggregate economy is secured and the conditions fulfilled add materially to the comfort and economy of this form of modern life. You can readily see that this is not flying into impossible schemes, but is a conservative view of heating problems. I have been greatly interested in the objects of your society, and as I expect to be in New York soon, I would be glad to attend your meetings. I think your people will find that the careful study of what I have outlined will aid materially in the work of heat distribution, even carrying it to the extent of district heat distribution for all purposes where heat is required, as we do water and gas and other forms of energy from central plants.

After the reading of this letter the convention adjourned.

WEDNESDAY MORNING.

The meeting having come to order at 10.30 a.m., President Bates stated he wished to correct a wrong impression that there had been a disposition to belittle the architects, which is wrong, for without the architect there would be no need of the engineer.

Letters were read by the secretary from R. C. Carpenter, W. F. Wolf and John Demarest regretting their inability to be present.

The report of the Nominating Committee was presented by James A. Harding, and after a brief discussion it

was decided to hold the election at 12 o'clock.

Alfred A. Hunting of Boston read a paper entitled "Heating and Drying by the Use of Exhaust Steam and Live Steam Reduced to Low Pressure, Either Separately or in Combination." Chas. S. Onderdonk suggested that as this paper presented facts it gave little opportunity for discussion, but cited several proofs that failure to utilize exhaust steam was an expensive waste.

In the absence of Professor Carpenter his paper was read by Mr. Harding. It was entitled "Testing Steam Radiators."

Mr. Barron stated that his ideas differed with those of the paper and that he was in no doubt that some of his cherished views were wrong, but that the profession would probably pursue the old course, though the tests described showed such practice to be different from what would be best. Mr. Jellett remarked at some length on the efficiency of what are known as flue radiators, agreeing that the heating of air by contact was the most efficient means and radiators constructed to accomplish a close contact of the air were to be desired. J. J. Blackmore and J. A. Harding also made remarks on this paper.

Further discussion was deferred, as the time set for the election had arrived and the president announced A. G. Paul and D. M. Quay as tellers.

Mr. Bates stated circumstances existed that would prevent him from serving further as president and he hoped the members would cast their ballots for Chas. W. Newton.

The election resulted as follows:

President, Chas. W. Newton.

First vice-president, W. M. Mackay.

Second vice-president, Chas. S. Onderdonk.

Third vice-president, Stewart A. Jellett.

Secretary, L. H. Hart.

Treasurer, J. A. Goodrich.

Board of Managers: James A. Harding, B. F. Slangland, Geo. B. Cobb, U. G. Scollay and Wm. McMannis.

Council: R. C. Carpenter, E. P. Bates, Henry Adams, T. J. Water, A. A. Cryer.

An amendment to the constitution was offered by Mr. Jellett that hereafter the elections be held according to the plan followed by the American Society of Mechanical Engineers. After an invitation had been given by Mr. McMannis to visit the Department of Buildings and inspect the New York school heating system the meeting adjourned till 3 p.m.

WEDNESDAY AFTERNOON.

The meeting was called to order by Vice-President W. M. Mackay at 3.20 p.m.

D. M. Quay then spoke on the paper of Professor Carpenter, stating that specifications should go further than to

give the amount of radiation required and the height, shape and character should be specified. J. J. Wilson asked for the results of experience on the velocity with flue radiators, as compared with ordinary radiators. Mr. Jellett stated he had found that above 25 inches in height flue radiators gained little, but up to this height a velocity of two to two and one-half times what was possible with ordinary radiators could be secured. He had secured a temperature of 180° in the air current above the radiator and a temperature of 203° in the flue, which was not possible with a direct radiator.

In the absence of T. J. Waters the secretary read his paper, entitled "Heating and Ventilation of School Buildings," and B. F. Stangland read the paper by H. B. Prather, entitled "A Prison Heating and Ventilating Plant." Mr. Jellett described the prison at Allegheny, Pa., as having been erected previous to the prison mentioned in the paper. This plant has been very successful in operation, and in use since 1883 without repairs.

H. J. Barron then read his paper on "The Literature of Heating and Ventilating," after which he read a criticism on his paper by David M. Nesbit of London, Eng.

Discussion was resumed on the paper entitled "Determining the Heating Power of Heating Systems."

D. M. Quay remarked that while the specifications generally written required some result, that result was not sufficiently definite in its description to avoid difficulty in securing prompt settlement.

Mr. Jellett mentioned Schumann's rule for calculating the requirements of buildings for determining the final result, as being a good guide though not entirely satisfactory.

Fred. P. Smith remarked that it might seem odd for an engineer to mention that at times the heat unit is too closely adhered to, and that formula was not to be depended on at the expense of practical experience.

Mr. Barron doubted if the architect or his client could be satisfied in August by a test that the plant would be adequate in cold weather. Mr. Harding mentioned that he had one customer to agree to pay 6 per cent. interest on the cost of the plant till satisfied of its efficiency. W. J. Baldwin cited an experience where less indirect surface was required for a building than was needed in direct surface. Mr. Quay mentioned that respect must be paid to the data prepared by experts, even though cases were found where special judgment was necessary. Mr. Baldwin stated that data must be looked on as a beginning, which is necessary practice.

Mr. Smith suggested that the society should appoint a committee to secure a set of guarantees for both heating and ventilation to be authorized by the society.

Mr. Harding made a motion that a committee of three be appointed to confer with a committee from the Master Steam and Hot Water Fitters' Association on the formulation of a uniform specification and contract for the heating of buildings, which was carried. The committee appointed was Stewart A. Jellett, D. M. Quay and F. P. Smith.

James A. Harding mentioned that the by-laws provided for a semi-annual meeting at some place to be designated.

The American Society of Mechanical Engineers extended an invitation to the members to attend their monthly meeting on Wednesday evening, the occasion being the reading of a paper by Alphonse Fteley, chief engineer of the Water Works of New York, on "The Water Supply of New York."

The society tendered a vote of thanks for the invitation and then adjourned to meet at 10 a. m. Thursday morning.

THURSDAY MORNING.

The convention was called to order at 10.30 a.m. by Vice-President Mackay. Mr. Barron opened a discussion of the paper on "Heating and Ventilating of School Buildings," taking exception to many of its provisions, the location and character of the radiators, the speed of the air and the exhaust fan as used. B. Harold Carpenter agreed with the paper in the use of the blower. He did not think revolving air over night bad practice, even in the coal region where the fuel used could be secured at 90 cents per ton. Revolving the air over night could have few objections with a system that could change the air in the building in ten minutes. During the night vents were closed and the air was revolved by gravity from contact with direct radiators. The closets were provided with a vent shaft having a heater in it and no air direct from the system was used. The air from the halls and corridors, owing to pressure, found its way to the closets, kept the room warm and passed off through the vent shaft, preventing the closet air entering the building.

Mr. Harding spoke on the use of the exhaust fan in directing the outgoing air to the proper exit.

Mr. Jellett stated that he overcame vibrations from fans by drawing the air through fans and making connections by means of painted canvas. Air coming through the fan never brings water to freeze on the fan and stop its operation as he had known. He used an aspirating coil in the assembly chamber of the ventilating ducts in the attic, as he had known the weight of the air in a cold attic to stop ventilation. He did not depend on louvers for the escape of air, as they were affected by wind pressure, but used specially constructed ventilators which prevented down draft. He also mentioned the use of mica dampers in connection with louvers and vent shafts to prevent down currents.

Mr. Baldwin called attention to the unavoidable placing of ventilating flues in outside walls.

The secretary stated that Thomas McNeill, an old steam engineer, was present and had invited the members to attend one of his lectures at the New York Trade School on Friday afternoon.

Mr. Baldwin, who designed the system of ventilating the subways of New York, gave a brief description of it, and invited the members to inspect the system.

Mr. Jellett asked to have the Specification Committee increased to five, and the Chair appointed James A. Harding and E. P. Bates.

George B. Cobb moved that a vote of thanks be tendered to their past officers for their labors in perfecting its formation, which was carried.

After some discussion, a motion dispensing with the semi-annual meeting for 1895 was then carried.

The secretary read the contract with the American Society of Mechanical Engineers for the use of their house, which was considered very generous.

Topic No. 7 was taken up and Mr. Jellett described a method of avoiding the use of air valves, and mentioned systems with 428 radiators and others of 44,000 feet of radiation working successfully.

J. L. Wells considered that the air valve could be dispensed with only at some risk.

Mr. Quay described successful working plants in Chicago.

The meeting then adjourned.

THURSDAY AFTERNOON.

The convention was called to order by Vice President Mackay at 3 p.m. The secretary read a telegram from Charles W. Newton resigning the office of president, making necessary a new election, which resulted in the choice of Stewart A. Jellett for president. Mr. Jellett expressed his interest in the society, and said his endeavors should be for the welfare of the society, of engineering and the public. The advance of Mr. Jellett left vacant the office of third vice-president, which was filled by the election of D. M. Quay.

Mr. Harding moved in compliance with the law that the secretary be instructed to cast a ballot for all of the officers of the society, which was done.

New Members.

The council announced the election of W. Harry Dewey and Norman S. Kellogg to full membership; Geo. T. Weymouth, Jr., as a junior member, and Samuel D. Tompkins, Thomas Thompson and A. G. Paul as associate members.

Topic No. 12 on "Value of Standing Committee of the Society on Tests and Standards" being next discussed, D. M. Quay moved that a committee be appointed to make and supervise tests and

standards, which was carried, and the following committee was appointed: Major H. E. Light, A. A. Hunting and E. P. Bates.

H. J. Barron moved that a committee be appointed to establish a clearly defined minimum standard of heating and ventilation for all classes of buildings, which was carried, and the following committee was appointed: H. J. Barron, Wm. McMannis and Prof. J. H. Kinealy.

On Mr. Barron's motion that a committee of five be appointed to frame a law to provide legislation compelling the ventilation of all public buildings in accordance with the standard of this society the chair selected the following: W. M. Mackay, James A. Harding, L. H. Prentice, H. D. Crane and B. Harold Carpenter.

Discussion of A. A. Hunting's paper on "Heating by Live and Exhaust Steam" was taken up and remarks made by Messrs. Barron, Quay and Harding.

J. L. Wells, chairman of the Executive Committee of the Master Steam and Hot Water Fitters' Association of the United States, spoke on the preparation of a uniform contract, and stated that one had been drawn up which would be sent to all members if they desired. This contract is not considered to be final in form, but open to improvement with a view to provide for a reasonable safety to the heating contractor for his money. It also provides for the payment for plans and specifications and makes provision for insurance and the payment for extra work.

Topical discussion on iron and steel pipe being taken up, D. M. Quay stated that steel pipe as found was often harder on one side, making it difficult to cut, and also to thread, as the threads were deeper on one side than on the other. Steel pipe was also thinner, so that the threading weakens it more relatively. He also stated that pipe up to 2-inch is now made with a butt weld. Mr. Light found it difficult to make up the joints in steel pipe. Mr. Barron said his men objected to using steel pipe. Above 6 inches in size, however, steel pipe is not objectionable, but in small sizes it had been said it increased the labor of cutting and threading 20 per cent. Mr. Carpenter asked for information in reference to durability of these pipes exposed to electrical currents. Mr. Barron related the experience of a contractor who used cast iron pipe with screw joints in the ground with good results.

In discussing topic No. 20 the general impression was that mushroom registers introduced air at the point of contamination and then circulated it, which was objectionable.

The convention adjourned at 7 p.m., to meet again next year in New York at the call of the Board of Managers.

A. B. WHEELER, formerly with the Detroit Heating & Lighting Company,

and Windsor Heater Company, is now with the Hoffman Russell Company, 82 Lake street, Chicago.

HEATING NOTES.

THE NIAGARA RADIATOR COMPANY, Buffalo, N. Y., have placed Walter Pendleton in charge of their New York office, at 89 Centre street. Mr. Pendleton has an attractive display of radiators in his showroom.

W. A. RUSSELL has resigned the management of the business of the Niagara Radiator Company, at 89 Centre street, New York, in order to give his whole attention to the valves and numerous specialties of the Detroit Lubricator Company, Detroit, which under his management have become well known to the heating trades. Mr. Russell is now furnishing an office very handsomely in the same building and will be pleased to receive calls from those in the heating trades.

A MEETING of the stockholders of the Kentucky Heating Company was held last week at Louisville, Ky., and resulted in the re-election of the old Board of Directors and officers. Donald McDonald was elected president, R. T. Durrett vice-president, Chas. F. Johnson second vice-president, W. T. Durrett engineer, and Thomas W. Kennedy secretary. The members of the Board of Directors are R. T. Durrett, J. H. Lindenberger, P. Meguiar, Charles F. Johnson, W. H. Dillingham, Nicholas Finzer, J. G. McCullough, W. T. Durrett and Donald McDonald.

G. SHREWSBURY of the Calda Works, Station Road, Camberwell, London, S. E., England, is putting on the market a new conservatory boiler to use gas as a fuel.

THE LARGE CALENDAR which the Smith & Winchester Company of Boston, Mass., are sending to their friends in the trade is a conspicuous record of the days. The whole publication measures some 14 x 25 inches and half of that space is given up to the 12 monthly sheets. The design of the upper card includes a picture of the Winchester boiler, and besides the name of the firm, calls attention to their business in steam, gas, water and plumbers' supplies. The word "Everything" spelled out in pipe fittings indicates the range of the company's goods. Special articles are noted on each separate sheet. Pumps, wind engines, heating boilers, &c., are some of the articles enumerated.

THE C. R. MERES MANUFACTURING COMPANY of Norwalk, Ohio, have been incorporated, with a capital stock of \$10,000. The incorporators are Calvin Whitney, S. W. Owen, C. P. Wickham, J. S. White and F. H. Jones. The company will manufacture the hot water furnace recently patented by C. R. Meres.

THE JOHN DAVIS COMPANY, 253 255 Kinzie street, Chicago, are to install a steam heating and power plant in the building of George G. Newberry, Washburn avenue and Eldredge court.

THE SAMUEL J. POPE COMPANY, 237 Fifth avenue, Chicago, are to furnish for the water works at Woodstock, Ill., engine house and stack, tubular boiler, artesian well, pump, fire pump, boiler pump and heaters and four miles of water pipes. The amount of contract is \$26,000.

Determining Heating Power of Heating Systems.*

BY J. H. KINEALY, ST. LOUIS, MO.

It has always seemed to me that the requirement in a contract for a heating system that makes the contractor wait for his money until the system can be tested in zero weather, in order to determine its heating power, is a bad one in every way.

If the plans and specifications have been drawn up by a consulting engineer not in the employment of the contractor, the engineer is responsible for the proper working of the system, and the contractor, in such a case, is only responsible for the work being done in accordance with the plans and specifications.

Where there are no plans and specifications upon which contractors are asked to bid, but each contractor is expected, or asked, to furnish his own plans from which to work, it is but reasonable that the owner should be given either a complete set of plans and specifications that he may submit to a consulting engineer for advice, or a guarantee of some kind as to the heating power of the plant.

Very few of the small heating systems put in dwellings have any very elaborate plans drawn for them, and many large plants are put in without any specifications at all. This of course is the natural result of the desire on the part of the owner to avoid the cost of plans and specifications. He, therefore, goes to a firm of contracting heating engineers and tells them he wants his building heated by steam or hot water, as the case may be. The contractors send a man to look at the building or the plans of the building, and to make a rough sketch of what will be required; this sketch may or may not be somewhat elaborated in the office, but, whether it is or not, it will serve as the basis of the bid for doing the work. The contractor knows the owner does not care for any elaborate plans and specifications, and, therefore, as he should from a business point of view, he spends as little money upon them as possible, and makes only such drawings as are absolutely necessary to carry out the work. Another reason why the contractor does not get up more elaborate drawings than are absolutely necessary for himself is that he is not sure the owner will want the work done after the bid is made. It may be the owner finds he cannot afford to have the work done at all, or that he has received a cheaper bid from some other firm.

The owner desires only that the building shall be heated during all kinds of weather, and that the cost of the plant shall be as small as possible; and as custom in most parts of the country has decided that a heating system of a building shall be considered as adequate if it will keep the temperature of the air in the building at 70° F. during zero weather, he asks the contractor to guarantee the plant to do this.

The contractor guarantees that the plant he proposes to put in the building will keep the temperature inside at 70° F. when it is zero degrees F. outside; puts in the plant, and then, hardest part of all, waits until zero weather to test the plant and get his money.

In order to avoid the waiting for zero weather on the part of the contractor, I desire to propose a scheme for deter-

mining the heating power of heating systems during weather when the temperature is above zero.

It is assumed, as the basis of the scheme, that the heat lost through the walls and windows of a building during an hour is directly proportional to the difference between the temperature of the air inside the building and that of the air outside; also, that the heat given to the building in an hour is directly proportional to the difference between the temperature of steam or hot water in the radiators and that of the air inside the building.

The total amount of heat lost by the building per hour is given by the equation

$$H_1 = a(t_1 - t_2).$$

a is the total heat lost per hour per degree difference in temperature.

t_1 is the temperature of the air inside of the building.

t_2 is the temperature of the air outside of the building.

Also, the total amount of heat received by the building per hour is obtained from the equation

$$H_2 = b(t_3 - t_1).$$

b is the total heat received per hour per degree difference of temperature.

t_3 is the temperature of the steam or hot water in the radiators.

t_1 is, as before, the temperature of the air inside of the building.

t_2 may be very little greater than the temperature of the steam in the boiler, or it may be much greater, depending upon the length of the pipes, and upon the way in which they are protected.

Now, after the system is in the building, it is evident that the heat lost per hour must be equal to what is received, if the temperature inside remains constant, and, therefore,

$$H_1 = H_2, \text{ or} \\ a(t_1 - t_2) = b(t_3 - t_1).$$

From this we have,

$$\frac{t_3 - t_1}{t_1 - t_2} = \frac{a}{b}$$

Since the building cannot change, a cannot change; and since the heating system is supposed to be always the same after it is put into a building, b cannot change. Therefore, for the same heating system in a building, we have this proportion, which always holds good whatever may be the value of t_1 , t_2 , or t_3 :

The result obtained by dividing the difference between the temperature of the steam or hot water in the radiators and the temperature of the air inside the building, by the difference of temperatures of the inside and outside air, always the same quantity for the same building and heating system.

While this proposition is not exactly true, it is true enough for all practical purposes, and may be taken as true without any great error. It is evident, also, that the proposition refers only to "direct" systems of heating and not to indirect systems.

Now, let us assume that our standard temperature for inside air is 70°; that our standard temperature for outside air zero degrees; and that the temperature of the steam or hot water in the radiators shall be t_4 , when the inside air is 70° and the outside air is zero degrees. Then, from the proposition just given, we have

$$\frac{t_3 - t_1}{t_1 - t_2} = \frac{a}{b} = \frac{t_4 - 70}{70}$$

From this equation we get,

$$t_3 = \frac{t_1 \times a}{70} + \frac{t_1(t_4 - 70)}{70}$$

* Presented at the New York meeting of the American Society of Heating and Ventilating Engineers, January 22-25, 1895.

being, t_1 is the guaranteed temperature of the steam or hot water when the temperature of the inside air is 70° and that of the outside air is zero degrees; t_2 the temperature of the inside air, when the outside air is t_3 , and the temperature of the steam or hot water is t_4 .

To show the use of the equation assume the following example:

A contractor agrees to put in a heating system that, with 5 pounds of steam by the gauge, will keep the inside air at 70° when the outside air is zero degrees. He makes a test of the heating power of the system when the outside air is at 10° , and with a gauge pressure of 3 pounds of steam keeps the temperature of the air inside at 75° .

Here we will assume that the temperature of steam in the radiators is that corresponding to the pressure in the boiler; then t_4 is 227 , the temperature corresponding to a gauge pressure of 5 pounds, t_1 is 75 and t_3 is 10 . Putting these values in the equation for t_2 we get:

$$t_2 = \frac{75 \times 227 - 10(227 - 70)}{70} = 222.5$$

The gauge pressure corresponding to 222.5° is about $3\frac{1}{2}$ pounds, so that, as the building was heated during the test with a gauge pressure of 3 pounds, the system would seem to have a slightly greater heating power than called for by the contract.

In the case of open hot water systems of heating the test may be run with the outside air at almost any temperature, as the hot water in the heating system may have any desired temperature less than 212° , and not run the temperature of the inside air above 70° , while in the case of low pressure steam systems the test cannot be made when the outside air is much over 10° without running the inside temperature up to 80° or 90° during the test.

I have assumed that when the temperature of the outside air is zero degrees and that of the inside air is 70° , the temperature of the water in the radiators will not average more than 200° , the temperature of the hot water entering will be 210° and that of cold water leaving the radiator will be 190° , and have calculated the following table showing what the average temperature of the water in the radiators ought to be, in order to keep the inside air at 70° for different temperatures of the outside air.

Table I.

Temperature of outside air.	Average temperature of water in radiators.	Temperature of water entering the radiators for a fall of 20° .
0	200	210
5	191	201
10	182	192
15	172	182
20	163	173
25	153	163
30	144	154
35	135	145
40	126	136

A custom of reducing the heating power of systems to a common standard would be somewhat similar to the custom that now prevails among mechanical engineers of reducing the evaporative power of boilers to a common basis. Tests to determine the evaporative capacities of boilers are made under widely different conditions of gauge pressure and temperature of feed water, but all water evaporated is reduced to "water from and at 212° ." I propose, therefore, that in determining the heat-

ing power of heating systems tests be made and the results of all tests be reduced to standard conditions.

The standard condition for hot water systems shall be: An average temperature of 200° in the radiators to keep the inside air at 70° when the outside air is at zero degrees.

The standard condition for low pressure steam shall be: A pressure of 5 pounds, by the gauge, in the boiler to keep the inside air at 70° when the outside air is at zero degree.

If tests were made to determine the heating power of direct radiator heating systems, and were reduced to the proposed standard conditions, the profession would soon acquire a lot of valuable data as to the required ratio of heating surface to cooling surface for various conditions of exposure and various classes of building. I can see no valid reason why such tests should not be made upon heating systems, and their heating powers reduced to the manner proposed. Such a method of determining the heating power of plants would undoubtedly be of value to the contracting heating engineer, as he would not then be obliged to wait for zero weather in order to determine whether or not the heating power of a plant was as guaranteed.

Below is given a table showing the gauge pressure required to heat the air inside of a building to different temperatures for various temperatures of outside air, and the heating power be equivalent to that required to heat the same building to 70° in zero weather with steam at 5 pounds by the gauge:

Table II.

Temperature of outside air.	Gauge pressure of steam in the boiler for inside air at a temperature of			
	70°	75°	80°	85°
	Pounds.	Pounds.	Pounds.	Pounds.
0.....	5	$11\frac{3}{4}$	$20\frac{3}{4}$	.....
5.....	1	7	14	.....
10.....	.....	$2\frac{3}{4}$	9	$16\frac{3}{4}$
15.....	.....	.....	$4\frac{1}{2}$	11
20.....	.....	.....	$\frac{1}{2}$	$6\frac{1}{4}$
25.....	.....	.....	.....	$2\frac{3}{4}$

A Short Talk on the Construction of Hot Water Radiators.*

BY J. J. WILSON, TROY, N. Y.

My only apology for inflicting this communication upon you is a desire to offer for your consideration a few suggestions of importance relating to the construction of radiators for hot water heating. It has been an idea with many engaged in the heating line that it is necessary to purchase a high priced radiator in order to have it prove satisfactory. This, however, has not been my experience. The shape of numerous high priced radiators is such that, while suitable for steam, they do not represent the best type of radiator for hot water heating. It is a well-known fact among the trade that, owing to the phenomenal increase in this system of heating, many radiators formerly used for steam heating were put upon the market for water without any changes, and in cases where they lacked top connections between the sections they were added, very little thought or attention being given to

their internal capacities or outward shapes, and there is no doubt that it has been a detriment, in some instances, to the success of this system of heating, requiring much more fuel to heat certain styles of radiators, owing to their large internal capacities for holding water, and entailing extra work upon the boiler to heat a certain number of square feet of radiation.

I will admit that there is a necessary volume to the body of water as it passes through the radiator sections which it would not be well to reduce. This volume, however, has not as yet been definitely established. To more clearly illustrate my meaning, I shall make a comparison: A bath or range boiler 16 inches in diameter and 48 inches in length will contain 9651 cubic inches, or a water capacity of about 42 gallons. The surfaces of the boiler amount to about $19\frac{1}{2}$ square feet, and if the boiler surface were not galvanized, and its location such that air could pass freely over its surface, it would heat a room $6 \times 9 \times 10$ feet, or 540 cubic feet of space, having average wall and glass exposure, to a temperature of 70° in zero weather, with the water at from 160° to 170° .

I offer, in contrast to the above, a radiator the actual size of its water section, independent of feet, being 33 inches high, 9 inches wide, and $1\frac{1}{4}$ inches thick, its internal capacity averaging a pint of water to the square foot of heating surface, and the actual surface of section backed by water being about 6 square feet. Using the volume of water in the range boiler and distributing it among the sections of the radiator it would furnish water for 336 square feet of heating surface, sufficient to heat a schoolroom $36 \times 28 \times 12$ feet with average glass and wall exposure, but with only one change of air per hour, to 70° in zero weather, the temperature of the water being from 160° to 170° . There are radiators which may, in a measure, be likened to the range boiler, containing the maximum amount of water in their internal surfaces to the minimum square feet of heating surface.

During the past year I examined a hot water plant which had been in use two winters, but failed to give the guaranteed results, viz., a temperature of 70° in zero weather with the water at 170° . The boiler construction was favorable to a quick circulation, and under ordinary circumstances equal to heat the amount of surface attached to it. I examined the piping valves, fittings, &c., to discover anything which would be detrimental to the water circulation, but found them correct. The radiators were then measured and found to contain the necessary amount of surface to heat the required space. Upon making a rough measurement of the internal surface of these radiators, it was discovered that they would average nearly a quart of water to the square foot of heating surface. Here it was very evident that the boiler had double work to perform, or twice the amount of water to heat per square foot of heating surface over the radiator which would average a pint of water to a square foot of surface. I suggested the use of another radiator, but I have since understood that the plant was removed without this trial being made, which I feel assured would have corrected the trouble. This is a most important factor in the successful working of a hot water boiler, viz., the amount of water to be heated per square foot of heating surface in radiators. Another important matter connected with the

* Presented at the New York meeting of the American Society of Heating and Ventilating Engineers, January 22-25, 1895.

construction of radiators which seems to be entirely overlooked by the trade is the grade or class of iron used in their manufacture. I have a customer who, after installing a heating plant, was compelled to remove the radiators used and substitute others in their place. This party is an experienced heating engineer, and had many heating plants in the same vicinity in which heating surfaces were apportioned the same, the conditions of exposure being equal and the results satisfactory. The unsatisfactory plant had been erected in the early summer, and during the first cool days of autumn its deficiencies were not noticed, but when the cold days of winter appeared a marked absence of heat could be felt. The boiler was large enough for the work to be performed. The system of piping was examined for mistakes and trappings; none were found to exist. It apparently was a problem that could not be solved. The idea then occurred that the radiators might be responsible for the results. The internal openings were examined for imperfect construction, resulting from dropping of cores, &c., in the sections, but the circulation was found perfect. Finally he wrote the maker of the radiators, who at once claimed they were all right, and offered to take them back if he could definitely establish the fact that the radiators were responsible for the conditions existing. A radiator of another make was procured, which was of sufficient size to heat a selected room, connected up to the system, and found to thoroughly heat this particular room. The balance of the radiators were removed and others substituted in their place with the result of the entire building being well heated and entirely satisfactory. The radiators which were removed were of a class which had usually given good results. They were shipped back to the factory and in transit a section was broken, the fracture revealing the fact that the iron was exceedingly hard and brittle, its structure being very close grained and of a silver color, indicating the presence of sulphur in the iron, possibly caused by sulphur in the coke used in the cupola for melting the iron. The internal passages in the sections of the radiators were very rough and had an appearance of slag, supposedly caused by the use of a large amount of scrap iron in the casting mixture. This shows the vast importance of using a good quality of iron, one which has the maximum of porosity with high tensile strength.

The competition in the sale of radiators is the cause, no doubt, in some cases, of the use of inferior grades of iron in their construction, and while the effect may not be so pronounced as above mentioned, it is undoubtedly an obstruction to the free passage of the heat units emanating from the element used for heating the radiators. My experience has been that a radiator, rectangular in shape, with flat surfaces, and containing about a pint of water to the square foot of heating surface, will give good satisfaction for water heating, other details of construction having proper attention, such as the proper spacing of sections, permitting a free circulation of air over their surfaces, the connections between the sections being free from any projections which may impede free circulation of water. Ornamentation which increases the thickness of the iron in the sections is detrimental. Surfaces in direct radiation not backed by water should not be rated as effective surface, and where possible the preference for

decorating radiators should be by metallic bronzes, their conductivity being much higher than enamels. A preference should also be given to radiators whose connections between sections are such as to permit the fitter to connect and disconnect them, allowing the assembling of radiation into required sizes from stock on hand, which is a decided advantage during the season when radiator factories are pushed to their utmost to fill orders. A failure to ship radiators promptly often causes vexations and expensive delays. I hope our society in the near future may be in a position to obtain, by experiment and research, positive data on the details above mentioned appertaining to the construction of radiators for hot water heating.

The Heating and Ventilating Engineer — A Commercial View.*

BY STEWART A. JELLETT, PHILADELPHIA.

I was much interested in a recent editorial in an English paper, on the subject of "Professional Fortunes," which the writer opened by advising all young men starting out to make their fortunes "to avoid the service of the State and all the professions alike." He then contrasted the fortunes made in trade with those of high and able offices of the Crown, and the leading members in the profession of the church, medicine, law and engineering.

The article is written from an English point of view, but it applies with equal force to us. Few, if any, of the great American fortunes have been made by professional men, and I have no knowledge of any among those engaged in our branch of engineering. Possibly I underrate the wealth of my fellow members.

The tendency in trade over the civilized world to-day seems to be downward. In some foreign countries it has apparently reached a starvation basis, from which there is as yet no prospect of relief. In America I regret to see the same tendency, in the increased numbers of the unemployed in our large cities, due in a great measure to unrestricted immigration, and the gradual reductions made in the price of goods, and, it follows, in the cost of producing them.

The maximum of quality or results for the minimum of cost is the demand of the buyer, and the manufacturer is striving to meet the conditions by improved machinery, systematized processes, and reduced wages and profits. The merchant is meeting the problem better by the enormous growth in the scale of everything in which business can be done. The world is his market and the printing press his salesman.

Changes in the methods of doing business enable him to carry his trade mainly on credit. I question if, in any legitimate business to-day, the margin of profit is as great as 20 years back, but where the enterprising merchant of that time had 100 customers his successor of to-day has 1000. It is the magnitude and multiplications possible in trade, and the rapid receipt and delivery of goods, enabling four to five times the volume of business to be done on a given capital, that accounts for present day mercantile fortunes.

This advantage in scale is entirely

wanting to the professional man, as his business requires him (at least to a great extent) to come in personal contact with his customers, and there are but ten hours in a hard worked day. If he be a doctor he must listen to the plaints of his patients, if a lawyer to the woes of his client, or if an engineer to the needs of his customer or the troubles of his contractors, all of which involve time. If these matters are delegated to assistants entirely he loses custom, and with custom income. It is unfair that this condition of things should exist. The engineer who has devoted years of careful study and thought to perfecting himself in his profession should be, and is, in all fairness, entitled to the same returns with his brother merchant of equal ability. It is true, however, that the phrase "For professional service rendered" on a bill has to many men a different sound from that of "To merchandise furnished."

It is with the thought of improving the commercial position of the heating and ventilating engineer that I submit this sketch for your consideration, trusting that it will open a discussion that will point the way to improvement. "We cannot make headway as individuals; we can only make headway by acting as a body."

And it is by correcting the existing abuses that I believe we can make most headway at present. The broad motto of the business world is the "Maximum of business at the minimum of expense." Let us apply this to our branch of trade, thoughtfully considering the many unbusinesslike methods that have been allowed to take root and grow. Should it not in our case be reversed, the maximum of expense for the minimum of business? I think so, and believe that you will agree with me when you consider the matter in detail.

The adage, "Competition is the life of trade," is capable of misinterpretation. Competition can overreach itself and become the death of trade, and unregulated competition is to-day the bane of many branches of engineering, and particularly our own. I quote from the Bulletin of the National Association of Builders: "While we are all competitors, and sometimes sharp competitors, we should still stand firmly together for the correction of errors in practice and in principles of action."

The business of heating and ventilating as carried on to-day is capable of three divisions:

1. The engineer who plans and supervises only.

2. The engineer who contracts only.

3. The engineer who does both.

The first is dependent wholly for his income from fees received for services, and he is consequently affected by the business methods of the third, who plans as well as contracts. The second looks solely to the profits of his contracts for his remuneration, while the business of the third, if rightly conducted, should pay a profit in each division. Let us now consider the abuses that most need correction. I would place first of all the practice of making plans and specifications for architects and owners free of expense to them. The committee who drew our constitution were impressed with the necessity of correcting this (see article 1, subdivision 8), "to establish a uniform scale of prices for all professional services."

The scale is nearly uniform now, I regret to say, but, like the winds of heaven, uniformly free to all. I have heard contracting engineers say that this custom has obtained such a firm

* Presented at the New York meeting of the American Society of Heating and Ventilating Engineers, January 22-25, 1895.

hold that to refuse to render such services free would kill their contracting business. You can all readily see the effect of such an unbusiness like practice. It largely kills the business of the consulting engineer, and takes a large part of the legitimate profits made in contract work to meet the expense of making these plans and specifications.

Many of our architects have one or two concerns to whom they send their building plans regularly to have the heating and ventilating and power systems carefully worked out, but with no thought of paying for such services. There is no sound reason why this abuse should not be at once corrected, and there are good reasons why it should be.

1. It is unfair to the consulting engineer, who manifestly cannot render such services free.

2. It is unjust to the general customers of the contracting engineer who does it, as the expense of doing it must come from the work done for them, and for which they are paying.

3. It places the architect who accepts such gratuitous services in a position to be justly criticised, as he must either be unfair to the engineer from whom he accepts such service, for which he himself is being paid, or he must be unjust to his client if the acceptance of such service affects his judgment in deciding the award of contracts for the work.

4. It is not business, viewed from any standpoint, and is unjustifiable. Let us, therefore, not adjourn this our first annual meeting until we have taken the necessary steps for an immediate and radical change in this department.

The present forms of specifications we are asked to bid on, and the contracts presented for our signatures, are also a proper subject for your just criticism. There are many specifications handed us for estimates which do not describe in any complete manner the work to be done, but this slight oversight is taken care of, so far as the owner is concerned, by some such clause as this: "The material and workmanship throughout must be entirely satisfactory to the owner and the architect, and the system must be guaranteed in every respect to do the work asked for to their satisfaction." I would advise all our members not to sign a contract with the word "satisfactory" in it. I hold that what cannot be defined or accurately stated should be left out of the specifications.

Who can estimate what it will cost to do anything to another man's satisfaction, one whom possibly he does not know? It came into use in the days when heating was largely a matter of faith in the party employed to do the work, and when there was no general or definite knowledge of the subject. It is the outgrowth of methods that do not exist to-day, and its use should be dropped. The buyer should be required to decide whether the thing he is asking you to do, when done as specified, will be satisfactory to him or not.

Another relic of the days of faith in the heating business is the clause requiring a guarantee of temperature. You have doubtless all read the interesting correspondence on this subject in an engineering journal published in New York in answer to a letter written them by one of my partners. It will not, therefore, be necessary to enlarge on this subject. But why, I would ask, should a contractor when asked to bid

on a definite amount of heating surface and boiler, located exactly on a plan, sizes of pipes, &c., being given, and the character, exposure and use of the building, better known to the maker of these specifications than to himself, be asked to guarantee the result? The contractor is asked to insure the results of another's calculations, for which insurance he collects no premium and for the practical determination of which guarantee he is often dependent on the employees of the owner. There is certainly no equity in this requirement, and the margins of profit on the labor and materials entering into the work do not justify the risk.

Our society should also protest strongly against the use of the inferior material that is now crowding the market, and insist that the standard be raised, advising the use of such materials only as they can conscientiously recommend.

There are, no doubt, numerous other abuses, some local, others general, that need correction, and that will be adjusted as we grow to appreciate more the benefits of our society. Those I have pointed out seem to me to first need attention. I will close by quoting from the Bulletin of the National Association of Builders, which is as applicable to our business as to that of the builder:

"The present custom of interpreting drawing and specifications is inherently unfair, notwithstanding the fact that many buildings are annually erected without serious difference between the contractor and architect; the contractor is allowed no voice in the settlement of questions that are of vital pecuniary interest to him. Contractors have always, submitted to a large amount of injustice in the demands made upon them, but there is no good reason why they should continue to do so."

Polluted Well Water.

From an interesting article on the "Well Waters of Our Farm Homesteads," read at the Montreal meeting of the American Public Health Association by Frank T. Shutt, Chief Chemist of the Dominion Experimental Farms, Ottawa, Canada, we quote the following remarks on testing water:

I feel that I should, in closing this paper, make a brief reference to the efficiency of the so-called tests in diagnosing a water. I am aware that many are of the opinion that reliance may be placed on the results of a qualitative examination by means of the sugar test—nitrate of silver and permanganate of potash—used alone or in conjunction. My experience leads me to believe that such results are frequently misleading. The amount of precipitate by nitrate of silver when the reagent is used qualitatively can only be conjectured, and from it no correct inference can be drawn unless something is known of the strata of the district and the amount of free ammonia that accompanies it. The decolorization of permanganate of potash is still more fallacious. Peaty and upland waters will discharge the color from a comparatively large quantity of permanganate of potash, while we often find very little of this salt required by water reeking with the decomposing products of excreta. The color and appearance of a water cannot be relied upon as indicating the purity or impurity of a sample. Many waters that have no marked odor prove on examination to be seriously contami-

nated. A water may be colorless, bright and sparkling, and yet dangerously polluted, while on the other hand, dissolved peaty matter of a comparatively harmless nature may tinge a water with a suspicious yellow color. There are, I believe, but few cases (and those of very bad and very good waters) where complete analysis is not necessary to a correct diagnosis. In our laboratory we always determine the following chemical data: free ammonia, albuminoid ammonia, nitrogen in nitrates and nitrites, chlorine, total solids at 105° C., oxygen absorbed at 80° F. from permanganate of potash in 15 minutes and in 4 hours, and phosphoric acid (qualitative). The results are returned in parts per million.

Some Wonderful French Schemes.

Plans and proposals for the projects of the International Exhibition at Paris in 1900 are being examined by a jury composed of prominent architects, artists, financiers, officials and others. The plans, models and designs are now on exhibition in the Palais des Industries and are exciting considerable interest, says *Le Figaro*. When the prizes were offered 664 aspirants applied for competition, but only 108 of these have completed their works, which now occupy 23 rooms in the Palais des Industries.

As the taking down of the Eiffel tower would cost the French Government 14,000,000 francs indemnity to the owners, besides the expense of demolishing it, most of the projects retain it as a feature and some use it as a basis of more or less ingenious and phantastic monuments. Plan No. 5 shows an immense aquatic castle on the Champ de Mars, which is considered as immersed for the occasion. No. 7 covers the entire Machinery Hall with a number of Russian cupolas and makes it a center of display of electrical illumination. No. 10 covers the entire Champ de Mars with an immense building. No. 14 places a tower on Machinery Hall, topped by an immense globe representing our planet. No. 16 lays parts of the Eiffel tower upon its side and builds two enormous elephants, decorated in East Indian style, and the interior furnished with restaurants, ballrooms, &c.

Another project raises the Eiffel tower to 1530 feet, and makes of it a monument of our century, decorating it with sketches from the various periods of our civilization. This projector will also dig a well 9000 feet deep. No. 20 puts in place of the tower a great monumental building as a corner stone for the twentieth century. One architect covers the entire exposition with a glass roof and erects an immense crystal palace. Bridges, columns, viaducts, railroads, mosques, ships, halls, palaces, &c., appear in endless variety.

A very interesting plan, magnificent in its conception, is No. 61. It makes the Palais des Industries the central point and has a straight line boulevard to the Champ de Mars, offering from all points perspective views of the grounds. He changes the Trocadero, turns Machinery Hall into the Art Building, provides for reproductions of the Acropolis of Athens, St. Mark's Place of Venice and principal monuments of architectural art, but retains nearly all the building of the exposition of 1889. This plan has so far found the greatest approval, as it is the most economic, artistic and perfect to all outward appearances.

THE RETAIL STORE.

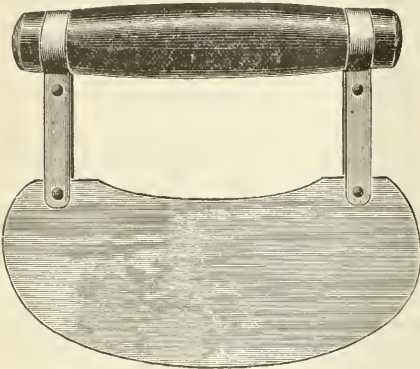
Daisy Mincing Knives.

A. S. Henn & Co., New Haven, Conn., are offering the Daisy mincing knives, as here shown. The blades are attached to the handles by means

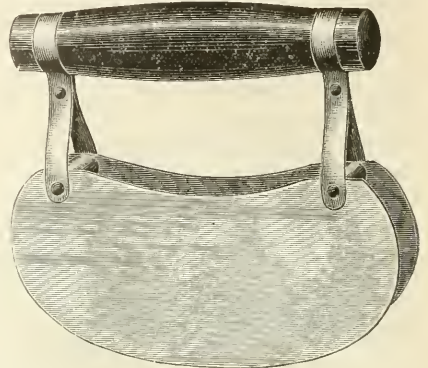
Hot Blast Brazier's Furnace.

The accompanying cut illustrates a new gasoline brazing torch, made by the White Mfg. Company, 40 and 42 State street, Chicago. It is designed

unscrewed to give the full force of the flame; when the job is completed the needle valve is screwed in, which retains the flame in the generator, thus saving the fluid without reducing the heat in the generator; the process may



Daisy Mincing Knife, Single.



Daisy Mincing Knife, Double.

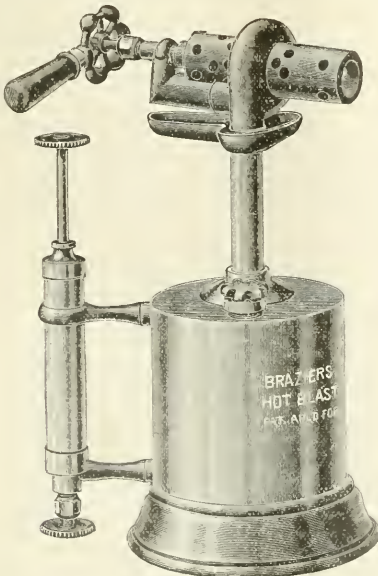
of steel bands or supports, which are forced around the handle and the two sides riveted together. This method, besides strengthening the knife, it is remarked, keeps the wood handle from

and constructed especially for brazing bicycle frames, band saws and all other light work. It can be used in the open air or against a coke backing. When not in actual use the gas may be

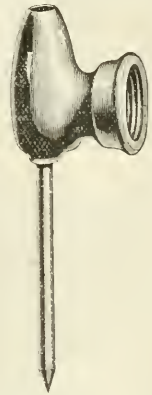
repeated for two hours without refilling the tank. Every tank is tested to 40 pounds pressure, which is the limit of pressure that can be put on the tank with the pump thereto attached. The tanks are spun from No. 20 gauge bronze metal, the bottom being spun in and soldered. All parts are made interchangeable to facilitate repairs.

The Eclipse Lawn Sprinkler.

The Crescent Brass & Iron Works, Detroit, Mich., are introducing for the coming season a lawn sprinkler as here



Hot Blast Braziers' Furnace.



The Eclipse Lawn Sprinkler.

splitting. There are three numbers of each style, the handles of all being wood, enameled. Two numbers of each kind have nickel plated tips and two are full nickelled.

reduced and still retain the heat in the generator while the work is being prepared for brazing. The method of its use is as follows: Having prepared a joint for brazing, the needle valve is

shown. It is made of cast iron, and is japanned in bright vermillion. It is explained that it differs from the Crown sprinkler, made by the same firm, in having no revolving parts, that it cannot be demolished when stepped on, and that it will last a lifetime. The sprinkler is made for $\frac{1}{4}$ inch hose attachment, and distributes the water evenly, it is claimed, over a circle of 36 feet in diameter.

MEMORANDA.

THE CHICAGO STAMPING COMPANY, Green and Congress streets, Chicago, are constantly bringing out new goods in the line of tinware. They have just put on the market a fine line of funnels, in which the bowl is seamless and beautifully rounded into a bell shape.

THE TRADE will be interested to know that the Excelsior Mfg. Company, St. Louis, have been appointed agents for the sale of the Michigan refrigerators. These refrigerators are favorably known to the trade, having been on the market for some years past. The factory has recently increased its capacity and is in a better position to supply the demand than it has ever been before. Changes and improvements have been made in the refrigerators where they were deemed advisable, thus keeping the line abreast with the times. The Excelsior Mfg. Company are issuing a catalogue fully describing this line of goods, which will be sent to the trade on application.

IT IS NOT often that G. William Gilkey, who is one of the representatives of Lalsance & Grosjean Mfg. Company on the road in New England, is caught napping, as he is one of the most active and enterprising of Yankee traveling men, and besides enjoys the distinction of wearing a silk hat with more ease and grace than any other man in the trade, with the possible exception of J. Sidney Smith. As the story goes, Mr. Gilkey recently having some little time to wait in the station at Greenfield, Mass., purchased a book, the title of which is variously given, but the majority agree that it was Ward McAllister's "Guideto Correct Dressing and Deportment." However that may have been, it was so interesting that our traveler failed to notice the lapse of time and allowed the last afternoon express for Boston to pull out without him. Of course this is something likely to happen to any one, but it becomes remarkable in connection with the hero of this incident because it is a proverb that Gilkey never gets left.

THE GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich., send out a little circular that is particularly artistic in its design. It is a small pamphlet measuring only 3½ x 6 inches in size. It begins with a sectional view and description of the Leonard cleanable cold dry air refrigerator, which is the particular product of the Grand Rapids Refrigerator Company. Next comes a variety of amusing and pretty pictures calling attention with more or less directness to the merits of the Leonard cleanable. One of them shows Queen Mab, or one of her Court, charioted upon a Leonard cleanable. Among other beings whose portraits are brought into the story are brownies, salesmen, devils, countrymen, &c. In the middle of the pamphlet two enthusiasts are warmly grasping each other's left hands and swearing eternal friendship with the Leonard cleanable refrigerator.

NOTICE is issued by William M. Pasco, surviving partner of Winegar & Pasco, South Butler, N. Y., under date of January 15, that in order to close up the affairs of the late firm of Winegar & Pasco the entire stock of goods, consisting of shelf and heavy hardware, stoves, ranges, farm implements, paints and oils and all fixtures and lease of the store, &c., are offered for sale. Sales will be made in the usual manner until February 5, when the entire stock will be put up at public auction.

THE FIRM of Lawson & Dean, dealers in stoves, tinware, hardware and pumps, Tulahoma, Tenn., have been dissolved, C. M. Dean retiring, and T. D. Lawson continuing the business.

F. E. BROWNE, Los Angeles, Cal., issues a neat circular relating to F. E. Browne's tea and coffee urn. The coffee and milk jars of this urn are cast iron, porcelain lined outside and inside, and their bottoms are arranged to completely drain the jars. Various other advantageous features are alluded to. A broken view on the front of the circular shows the constructive features of the urn. Another circular issued by F. E. Browne relates to a lamp still for furnishing distilled water for drinking purposes.

THE E. STEBBINS MFG. COMPANY, Brightwood, Mass., have been appointed sole selling agents for the United States for the Little Giant traveling lawn sprinkler made by the Portland Lawn Sprinkler Company. This device was exhibited at the World's Fair and was a source of a great deal of interest, its power of locomotion attracting unusual attention. The particular feature of the sprinkler is that under ordinary water pressure it is able to move itself over the lawn in any direction, either in a straight line or circles, and may be set to travel a definite distance and to go at the rate of from 15 to 500 feet per hour, as may be preferred. It will throw water over a swath from 5 to 50 feet in width, according to adjustment, and under the average pressure of water will drag 100 feet of hose. The sprinkler has been used in several places and has called forth very complimentary testimonials.

THE RINGEN STOVE COMPANY of St. Louis, Mo., have brought out a line of refrigerators which they are offering under the name Quick Comfort. These goods have been especially built for the company in the hard wood lumber region of Michigan, are finished with great care, and tastefully ornamented and trimmed with solid bronze hinges and locks in antique copper finish. The refrigerators are packed with charcoal and lined with polished zinc. The main points of merit, the manufacturers state, are found in connection with the cold air flues and the waste water trap. The air flues are movable and easily cleaned, being of such construction that they cannot bend, warp or get out of order. The waste water trap is said to overcome the objections urged against the ordinary trap, and is located at the bottom inside of the refrigerator where it is always in sight. It consists of a single piece which can be instantly removed and cleaned. The bottom of the provision chamber of the refrigerator pitches toward the back so that when the chamber is being cleaned it is only necessary to lift out the trap and the water will escape through an opening in the bottom at the rear.

Philadelphia Lawn Sprinkler.

THE Philadelphia Lawn Mower Company, Philadelphia, are putting on the market the lawn sprinkler shown in the accompanying illustrations. The sprinkler is made of brass, and, as will be seen from Figs. 1 and 2, consists of a nozzle of cone shape, the upper or discharge end being perforated and having a screwed spud or nipple in its center; screwed to the nipple is a cone with a finely perforated disk forming its discharge end. Fig. 3 shows the sprinkler in operation. The water, in

its course from the hydrant, is unobstructed until it reaches the perforated end of the nozzle which divides it into solid streams. The streams strike the



Fig. 1.—Philadelphia Lawn Sprinkler.

upper cone at a point above the "plate, and are thus converted into spray, while the water which passes through the spud or nipple forms a fine center spray on its discharge through the finer



Fig. 2.—Sectional View of Philadelphia Lawn Sprinkler.

holes in the disk of the upper cone. By raising or lowering the cone on the nipple the space to be sprinkled may be regulated. Removal of the cone and the screwing of a cap on the nipple converts the sprinkler into a long range sprinkler for garden, lawn or

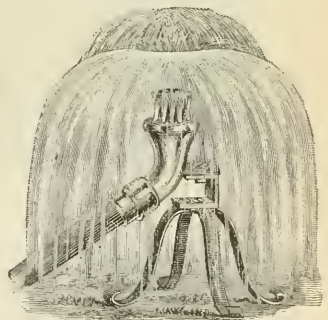


Fig. 3.—Sprinkler with Wrought Iron Stand.

flower use. The sprinkler is supplied in the straight style shown in Fig. 1, with a stand as shown in Fig. 3, with speed attachment for running it to the ground, and with a carriage having a hose reel attachment.

The trend of the cotton manufacturing industry toward the South is indicated in the announcement that five of the largest Massachusetts concerns in that line are now considering plans for the establishment of plants in the Southern States. Two New Hampshire companies have also applied to the State Legislature for permission to build cotton mills in other States. Economy in the price of labor and in freight rates is given as the reason for the projected move.

PLUMBING and GAS FITTING.

The Next Convention.

On the 11th, 12th and 13th of next June the National Association of Master Plumbers will hold their thirteenth annual convention at Philadelphia. The preparations that are being made for this convention will convey to those who attend a correct idea of why Philadelphia is called the "city of brotherly love."

Michigan Master Plumbers.

The principal feature of the third annual convention of the master plumbers of Michigan, which held its two

was the presentation to President Meathe of a handsome gold watch, chain and charm.

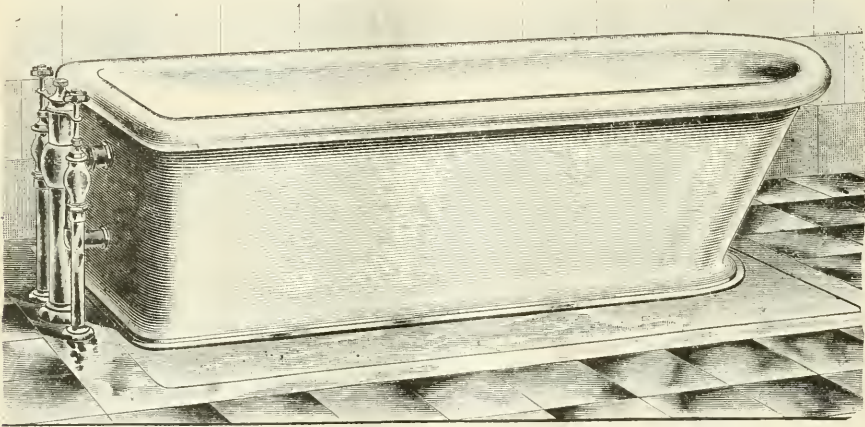
The Puritan Bath.

The Puritan bath with roll rim, which is the subject of the illustration, is manufactured by the Dalton-Ingersoll Company, Boston, Mass., and was patented on August 21, 1894. The features of the bath which are specially noticeable are its sanitary qualities and low height. It is made to set down on the floor so that its weight is distributed over a wide surface, and there is no possibility of dirt accumulating underneath it. It is 8½ inches less in height than the standard iron tubs, or

ings and premises. The weekly conferences will be begun soon, and at each of them a lecture will be delivered upon some important thing arising in connection with the work of the department. Especial attention will be given to sanitary plumbing and the best and latest methods for the preservation of cleanliness, so that the inspectors will be thoroughly posted upon all matters of antiseptic disinfection.

S. & G. Clamp and Testing Cover.

Sumner & Goodwin, 21 Oliver street, Boston, Mass., are introducing the S. & G. clamp and testing cover for iron hopper traps. The device shown here-



The Puritan Bath.

days' session at Bay City last week, was the discussion of the proposed bill which is to be presented to the Legislature. The bill, if passed, will make it obligatory for every plumber to have a license from the State Association before he will be allowed to do any work in the State. The object of this bill is said to be to improve the sanitary condition of business blocks and dwellings and to insure first-class plumbing. At the convention the following officers were elected for the ensuing year:

President, James Meathe, Detroit.
Vice-president, William H. Sullivan, Bay City.
Treasurer, Col. John A. Wheeler, Kalamazoo.
Secretary, Warren C. Weatherby, Grand Rapids.
Acting secretary, Benj. F. Guiney, Detroit.

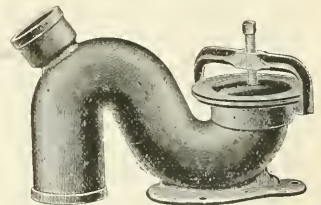
Executive Committee: E. E. Scott, Saginaw; George H. Porter, Jackson; W. W. Armstrong, Lansing.
Delegates to National Convention in Philadelphia: Wm. Lloyd, Manistee, and James Cooper, Pontiac.

A pleasing feature of the meeting

about 18½ inches from the floor to the top of the rim, making it especially advantageous for use with children or aged or fleshy people. The tub is of full size inside, and is made in four different lengths, 4 feet 9½ inches, 5 feet 3¼ inches, 5 feet 9½ inches, and 6 feet 3¼ inches, which is the extreme outside length, including the fittings. The baths are furnished in either porcelain or metallic enamel. Porcelain enameled baths are so well known that no further description is needed. The metallic enameled bath, however, is said to be new in this market, although it has been used in Europe for several years with satisfaction both as to appearance and durability. For smoothness of finish it is said to be superior to porcelain enamel, and should the metallic enamel wear off or become defaced the bath can be refinished in position so that it will look as good as new, an advantage which needs no further recommendation.

THE SANITARY INSPECTORS OF Minneapolis, Minn., will receive scientific instruction upon the inspection of build-

with was suggested by the frequent blowing out of the old style testing plugs when in use in cities having laws requiring the testing of all soil pipe



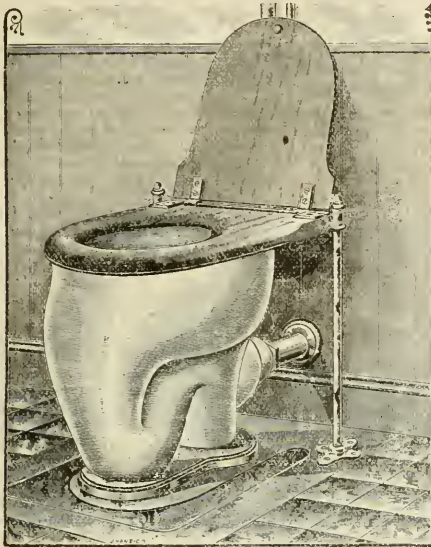
S. & G. Clamp and Testing Cover.

connections. As will be seen, the article illustrated consists of a circular rubber packing with corrugated face, which may be applied to the flange of any hopper trap; above this is placed a cast iron flange of same diameter, and to this pressure is applied on the upper side by means of a clamp and set screw.

The object in corrugating the rubber disk is to neutralize any little inequalities there may be in the face of the casting. The manufacturers claim that it is impossible for this packing to be blown out.

McDonald's Eureka Seat.

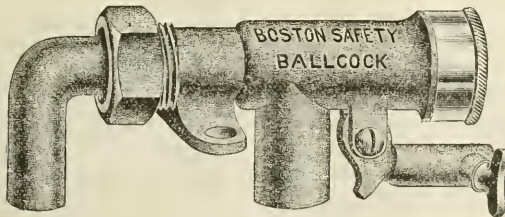
The A. Y. McDonald Company of Chicago have brought out a new seat



McDonald's Eureka Seat.

on which they have applied for a patent. It is illustrated in the cut shown herewith. The special advantage of this seat is that it is clean and open in the back, thereby saving the time of fitting to the wall around the pipes. It can be fastened to the wall or floor as desired, but was specially designed to fasten to the floor, as in many cases seats cannot

which works automatically from the pressure of the water. Whenever it is desired to renew the seat on the plunger worked by the ball float, or to empty the tank for any purpose, all that is necessary is to loosen the thumb screw and take out the ball. Then with the fingers the cap on the end is unscrewed, when the pressure of the water will close



Boston Safety Ball Cock.

easily be fastened to the wall. Galvanized or nickel plated fittings are furnished, while the best materials are used throughout.

E. W. STRADLING, E. J. STRADLING, E. H. BICE, A. H. DOBSON and JOHN J. DROZ were elected directors of the Stradling Plumbing & Heating Company, Utica, N. Y., at the annual meeting last week. The directors elected these officers: E. W. Stradling president; E. H. Bice, vice-president; E. J. Stradling, secretary; A. H. Dobson, treasurer.

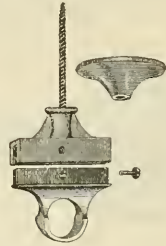
The Boston Safety Ball Cock.

The accompanying illustration shows the Boston safety ball cock manufactured by the Boston Brass Company, 40 Oliver street, Boston, Mass. This ball cock, which is described as noiseless, is designed for high or low pressure, and has, it is stated, been thoroughly tested under different pressures and conditions. It is constructed with a ground seat metal valve in the barrel,

factory and made with heavy copper balls and rods $\frac{3}{8}$ inch in diameter.

Perfect Brass Pipe Hanger.

The increasing use of brass pipe in plumbing work has made a demand for suitable hangers for attaching the pipes to wall or ceilings. A very neat device for this purpose is manufactured by David L. Billings, 35 Hancock street, Dorchester, Mass., which we show in the accompanying illustrations. Fig. 1 shows the separate parts of a single hanger, while Fig. 2 shows a triple hanger ready for use. Referring to Fig. 1 it will be seen that



Perfect Brass Pipe Hanger.—Fig. 1.—Separate Parts of Single Hanger.

the hanger consists practically of two parts. The upper yoke has a screw attached for fastening to the wall or ceiling, and in the bottom of the yoke is a longitudinal slit into which fastens the lower part of the hanger carrying the ring for holding the pipe. The piece fits into the socket, and is held in place by a screw passing through a hole in the metal. A small brass ceiling plate gives a finish around the screw at the top. The hanger is made entirely of brass highly polished and finished with

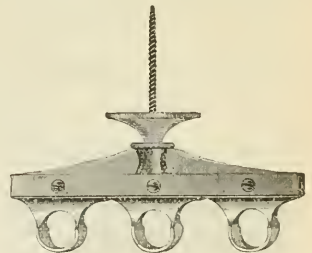


Fig. 2.—Triple Hanger Ready for Use.

either a flat or raised flange. In addition to the two styles illustrated there is also a double hanger. Special attention is directed to the simplicity of the device and the short time required to put it in place. The parts are interchangeable, which allows different sizes of pipes to be supported with the same hanger.

THE 1895 CATALOGUE of the Zero Valve Company, 212 Seneca street, Buffalo, N. Y., has just reached us. Both the Zero and the Vollmer Anti-Freezing Closet Valves are illustrated and described, and we notice a new Zero Self Closing Stop and Waste Cock. Other pages show the Vollmer closet seat, which is a swing or lift seat, adapted for hopper closets. Their

the automatic valve, thus shutting the water entirely off and at the same time push out the plunger which can be removed and any work done about the tank or pipes below it without shutting off the main supply. Or the cold water pipes can be tested without tying up the float in the tank. When the plunger is replaced the cap is simply screwed on and the whole thing is in working order. It is stated that the construction of the automatic valve is such that all singing or whistling noise and water hammer are avoided even under the highest pressure. These ball cocks are tested before leaving the

valves and seats are also shown in connection with closets. The IXL Vent Cap is said to be a simple and durable affair that can be adapted to the hub end of any soil pipe by simply adjusting a set screw.

Zero Self Closing Stop and Waste Cock.

The illustration presented herewith shows the Zero self closing stop and waste cock for use in connection with any fixture that is exposed to the weather. It is so designed that it can be buried in the ground and does not require a vault or box to be built around it. From the cut it will be noticed that on opening the valve the supply water flows up a separate pipe to the fixture, and does not flow up the pipe

TRAPS AND VENTS.

THE BUSINESS heretofore existing under the name of H. L. Tillinghast & Co., Providence, R. I., will on January 31 dissolve, and after that it will be continued as the H. L. Tillinghast Supply Company, Incorporated.

O. H. JONES, representing the F. W. Foster Mfg. Company, Boston, Mass., was in New York this week visiting the plumbing trade in the interest of the Foster high pressure ball cock.

THE ZERO VALVE COMPANY, 212 Seneca street, Buffalo, N. Y., inform us that the Vollmer patents have been granted for the different self closing valves which they manufacture.

A SPIRITED AND CLOSELY CONTESTED ELECTION for officers of the Master

lislature at Hartford last week the bill to control plumbing in the State.

THE PLUMBING FIRM of Murray & Wacker, College Point, N. Y., have dissolved partnership, and the business is now carried on by George Wacker alone.

THE ROCHESTER LEAD WORKS, William S. Mandeville and Frank E. Shepard, proprietors, Rochester, N. Y., are to build a new plant especially adapted for the requirements of their business. The firm are extensive dealers in pig lead, pig tin and antimony, and large manufacturers of lead pipe, block tin pipe, tin lined lead pipe, solder and babbitt metal, and in making a selection for their works decided to locate near the railway. They have just purchased the coal yard property at the corner of Exchange and Edinburgh streets. The ground space gives 58 feet on Exchange street, and runs back on Edinburgh street 180 feet, backing up to the Erie tracks, where a switch will be laid for a track for unloading and loading cars. A modern two-story brick factory is to cover the entire ground space, and work on the new building will commence as soon as the plans are drawn and contracts let.

LEAD PIPE THIEVES are at work in the lower section of the city of Philadelphia to such an extent that the police are kept busy trying to catch them, while at the same time warning all real estate dealers to look after the fastenings of doors and windows of vacant houses.

THE PLUMBING ESTABLISHMENT of Cunningham & Stowe, Marion, Ohio, was visited by fire last week. Insurance covers the loss.

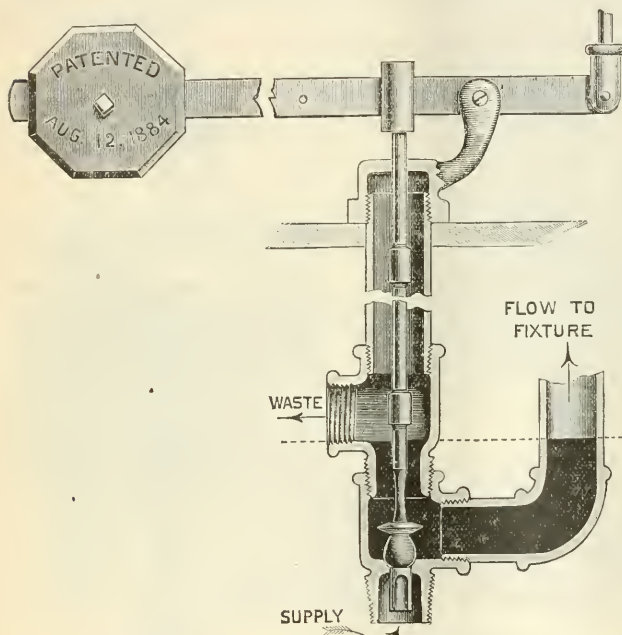
THE BROADWAY PLUMBING COMPANY were incorporated, at St. Louis, Mo., with an all paid capital stock of \$1000, to carry on a general plumbing, gas and steam fitting business. The shareholders are J. M. Life and Thomas Bond, each of whom owns 40 shares, and J. J. Shaw, 20 shares.

MACUMBER & JOHNSON of Worcester have leased a store in the Bugbee House block, Putnam, Conn., where they have established themselves in the business of plumbing, steam, water and gas pipe fitting.

A LETTER has been issued to the builders and contractors of Detroit, Mich., by W. E. Johnson, clerk of the Bureau of Sanitary Plumbing of the Health Department. The letter is issued as the result of several complaints in this direction where builders have paid for the plumbing and afterward found that it was not satisfactory to the bureau, necessitating changes and further expense. The Plumbing Bureau therefore advises that settlement be withheld until the plumber presents the certificate of final inspection by the department. The letter reads as follows: "An important section of the rules of the Board of Health governing sanitary plumbing and house drainage is: 'When work is completed and tests are satisfactory to the Plumbing Inspector, a certificate of approval will be issued to the plumber by the inspector.'"

THE LOCAL PRESS of Dubuque, Iowa, freely praise W. S. Molo for the heating plant and plumbing work done in the new High School Building.

THE NEW HAVEN GAS LIGHT COMPANY, New Haven, Conn., have voted to reduce the price of gas from \$1.50 to \$1.25 per 1000 cubic feet, to take effect



The Zero Self Closing Stop and Waste Cock.

in which the rod is placed which works the valve, and the valve is so arranged that it prevents the water flowing up in this pipe, preventing the rod or its casing from becoming gradually incased in ice and interfering with its operation. The waste being the full size of the pipe the probability of the waste being stopped is removed. It is further stated that when the valve is closed to stop the water supply the waste is so located as to prevent the entrance of sewer air, as the valve is effectually trapped. In case repairs are needed it is not necessary to dig the valve out of the ground, as it is arranged to use iron pipes, which may be unscrewed from the valve seat and the valve removed. The valves are made with rods and casing in lengths of 3½, 4 and 4½ feet.

OUT of 50,000 boys who graduated from the senior department of the Board Schools of the city of London during the year ended May 31, 1893, and whose subsequent occupations were recorded, 123 became plumbers.

Plumbers' Association for the ensuing year was held at Elk's Hall, St. Louis. The election resulted in a great deal of wire pulling. Jeremiah Sheehan, who was defeated by William McMahon for the presidency, has been the presiding officer of the local assembly for two terms, and was once president of the National Association. Following is a list of those elected: President, John Mahon; vice-president, W. H. Kuhne; second vice-president Wm. Schwehr; recording secretary, Wm. F. McCormack; financial secretary, John P. Kelleher; treasurer, E. J. Lonergan; sergeant-at-arms, A. J. Gallagher.

THE MONTHLY MEETING AND DINNER of the Plumbers' Supply Association were held at the Quincy House, Boston, last week. President Frank J. Knox of Hartford sat at the head of the table. The after dinner exercises were entirely devoid of formality and no business of interest was transacted.

REPRESENTATIVE ELLIOTT of New Haven, Conn., introduced to the Leg-

from March 1 next. At this figure gas can be profitably used for fuel, and the plumber will find it of advantage to make a push on the pipe fitting necessary for the use of gas stoves and to carry a selected line of gas cooking stoves.

THE FIRM OF E. K. Lockwood & Co. of Norwalk, Conn., plumbers, steam and gas fitters, have been dissolved and will hereafter be known as the Jones-Hotchkiss Company, the members being F. I. Jones and H. E. Hotchkiss, E. K. Lockwood retiring.

THE CITY OF WATERBURY, CONN., says the *New Haven Record*, has reason to be proud of her new water works that have been under construction for some time past. The supply was tested last week with highest success, meeting in every way the expectations of the projectors.

A MASTER PLUMBERS' ASSOCIATION has been formed at Harrisburg, Pa., with the following officers for 1895: President, E. C. Rauch; vice-president, J. Wesley Neil; secretary, James H. Lutz; treasurer, John A. Kramer.

J. J. CROWLEY, Hyde Square, Mass., in connection with his plumbing business on Lamartine street has opened a new place on Massachusetts avenue in the Back Bay.

THE COMBINATION SINK AND TRAP formerly made by Johnston & Meyer, St. Louis, and recently illustrated in these columns, is now being made by the Pleuger & Henger Mfg. Company, St. Louis. The device has many points of merit claimed for it by the manufacturer, who are preparing a circular describing same, which will shortly be issued to the trade.

THE TORONTO STEEL CLAD BATH AND METAL COMPANY, Limited, Toronto, Ontario, at the recent convention of the Ontario Architects' Association held in Toronto, distributed as a souvenir a small memorandum book which is an exceptionally useful and pretty article. It is bound in fine leather and contains a removable memorandum book made up of both blank and ruled pages. On the front cover is a picture in gilt of the steel clad bath and the inscription, "Souvenir O. A. A., 1895. Compliments of the Steel Clad Bath and Metal Company, Limited."

A READING, Mass., plumber failed to comply with the law and had to do a job a second time to escape a fine.

WE HAVE PLEASURE in acknowledging an invitation from President Ahern to attend the Fifth Annual Convention and Banquet of the Connecticut Master Plumbers' Association, to be held at the Waterbury City Hall, Wednesday, February 6.

LAKE PLUMBING COMPANY have been incorporated at Chicago with a capital stock of \$2700 to do a general plumbing business. The incorporators are William T. Payne, Guy C. White and Joseph B. Burt.

In the early part of 1893 the Master Plumbers' Association of Philadelphia decided to test the legality of the mercantile tax upon the plumbers. The test was made in the case of John Gormly, 1433 Columbia avenue, who was taxed \$7, besides 50 cents as the city fee for issuing the license. The court decided the case in favor of Mr. Gormly to the satisfaction of President Eynson and Secretary Clark of the association, as well as the 300 members, all of whom gave their support to Mr. Gormly.

WILLIAM HEAP has purchased the business of the Heap Manufacturing Company, at Muskegon, Mich., and will enter business for himself. He will build a new factory and manufacture sanitary goods.

A. F. HARVEY, Gloucester, Mass., has sold his stove and plumbing business to James S. Smith.

THE CONTRACT for repairs, &c., in the Garden Street School at Pawtucket, R. I., was awarded to the Pawtucket Steam & Gas Pipe Company.

J. M. WHITE, Bristol, Conn., has purchased the interest of his partner in the plumbing business.

THE PLUMBING ESTABLISHMENT of Leonard D. Hosford, at 43 Beekman street, New York, was visited by fire last Monday.

The *Metal Worker* acknowledges the courtesy of the Association of Master Plumbers of New York City in the receipt of tickets for their annual entertainment and ball, to be held in the Lexington Avenue Opera House on February 12.

COUNCILMAN DUFFEE of Providence, R. I., presented a resolution directing the city solicitor to apply to the general assembly for certain legislation relative to the plumbing laws, which was passed. The object of this is to elect the inspector of plumbing biennially and to allow the city council to amend the plumbing ordinances.

Montreal Master Plumbers.

The Master Plumbers' Association of Montreal held its regular meeting Thursday the 17th; a large number attended, and much business of importance was transacted. President Lamarche announced that he had received notice of the passing of the act of incorporation by the provincial legislature, and that now the association was in possession of all the rights and responsibilities of a regularly incorporated company. It was decided to celebrate the inauguration of the association and the attainment of corporate rights by a banquet to be held in February. A committee was struck with full power to carry the business to what cannot but be a successful conclusion. The sanitary and legislative committees reported the completion of their work of revising the City Plumbing By-Law. It was resolved that the executive committee at once communicate with the civic authorities, with a view to getting the by-law amended, as suggested by the report of legislative and sanitary committees, and to take steps toward the better enforcement of the by-law.

A letter was received from the secretary of the Council of Arts and Manufactures reporting that the plumbing class was making excellent progress, and requesting the association to make suggestions as to a course of drawing for the class; referred to apprenticeship committee. A number of new members were added to the roll, which now contains the names of all the leading firms of the city. A master plumbers' association is about to be formed in the city of Quebec. The Montreal master plumbers are to be congratulated on the rapid progress made since their inauguration, only a few months ago. One of the leading physicians and surgeons of the city has kindly consented to lecture before the association in French and English. We believe the subject of the doctor's discourse will be the close connection be-

tween successful surgery and good plumbing. This is a phase of the sanitary question that has not received the attention that its importance deserves from leading surgeons.

News and Notes.

The Brazilian Government has ordered \$5,000,000 worth of war material from the Armstrong Gun Company of England.

The "good roads" question is being actively agitated in New York State, and the employment of convict labor in this work is urged.

The House Committee on Labor has ordered a favorable report on the bill of Congressman Phillips of Pennsylvania, authorizing the President to appoint a commission of 15 members, including five representatives of labor, five business men and five farmers, to meet the problems presented by labor, agriculture and capital. The Commission is expected to exist for two years. It is designed to furnish Congress with information and suggestions as to laws that may be made a basis for uniform action by the various States in order to harmonize conflicting interests and to be equitable to the laborer, employer, producer and consumer.

Industrial reports from the South show a general tendency toward increasing business activity throughout that section. Several very important enterprises are being projected, with some assurance of their being carried out. Among them are two extensive steel plants, several large cotton mills and a number of mining enterprises.

A steel bridge across the St. Croix River, connecting Calais, Maine, with St. Stephen, N. B., was formally opened January 18.

Fifteen of the 25 regiments of United States infantry have now been supplied with the new Krag-Jorgensen rifle, and it is expected that, at the present rate, all the infantry regiments will be armed with this weapon before another three months have passed.

A system of water works has just been completed at Portland, Ore., at a cost of \$2,000,000. The supply comes from Bull Run River, and is brought a distance of 40 miles.

The foreign trade returns of the port of New York for the month of December, 1894, show an aggregate gain of \$15,725,000 as compared with the corresponding month of 1893. The increase is mainly due to heavy importations, which were nearly \$12,000,000 greater than those of December, 1893. For the calendar year, however, the volume of foreign trade exhibits a falling off as compared with that of the previous 12 months, the aggregate of 1894 being \$933,171,045, against \$1,068,919,917 in 1893, and \$1,053,756,430 in 1892. Imports of free goods were heavy, being \$239,332,660, against \$296,318,647 in the previous year and \$154,025,758 in 1892. The value of dutiable goods imported, \$203,537,304, is the smallest since 1879, and \$38,845,205 less than recorded in 1893. Exports of domestic produce, \$332,670,015, fell \$15,412,513 behind 1893. Imports of specie were \$20,669,377, against \$65,327,738 in 1893, and exports, \$129,003,594, against \$108,398,025.

A bill is now pending in the Legislature of the State of Alabama to exempt from taxation for ten years all new industries which have an actual investment of \$25,000.

TIN PLATES.

Tin Statistics for 1894.

The drop in the price of pig tin last year is readily accounted for by the large increase in the output of the metal. According to French & Smith's circular, the Straits settlements shipped 46,119 tons in 1894, against 39,782 tons in 1893 and 34,150 tons in 1892. Australia exported 5821 tons, against 5722 tons in 1893. Sales of Banca and Singkep amounted to 6100 tons, against 5418 tons in 1893. Sales in 1895 will, it is said, be further increased. From Billiton about 500 tons less was received than in 1893, and the production of the Cornish mines is estimated to have also been about 500 tons less. Other sources of supply are also opening out. From Bolivia the receipts are steadily increasing, and with better transit facilities the output of the mines in that country is gaining in importance. Some parcels of high grade tin ore have also been received in England from South Africa.

New Tin Plate Scale.

We print below the new tin plate scale adopted in conference in Pittsburgh January 15, and which took effect the next day, to continue in force until June 30, 1895:

TIN AND BLACK PLATE MILLS.

It is agreed that at a 1½-cent Western Iron Association card the prices for rolling, shearing, doubling and heating on a tin and black plate mill shall be as follows, with 2 per cent. additional for each 1/10 advance of said card, and 2 per cent. decline for each deduction of 1/10 to 1½-cent card:

Gauges.	Rolling steel, 2,240 pounds.	Do. bling.	Heating.	Shearing on law or close work on squaring shears.
Nos. 8 to 11	\$2.04	\$0.93	\$0.85	
Nos. 12 and 13	2.13	.96	.90	\$0.99
Nos. 14 and 15	2.45	1.10	1.17	
Nos. 16 and 17	2.24	1.49	1.32	
Nos. 18 to 20	3.62	1.63	1.48	1.52
Nos. 21 to 24	3.96	1.88	1.63	
Nos. 25 and 26	4.01	1.85	1.69	
Nos. 27 and 28	4.01	1.96	1.82	1.62
Nos. 29 and 30	4.50	2.32	2.17	1.54
No. 31	4.59	2.59	2.33	1.55
No. 32	4.80	2.60	2.44	1.65
No. 33	5.09	2.74	2.52	1.73
No. 34	5.64	2.91	2.76	1.93
No. 35	5.92	3.08	2.92	2.01
No. 36	6.32	3.15	3.03	2.15
No. 37	6.39	3.19	3.08	2.18
No. 38	6.46	3.26	3.13	2.21

1. Thirteen per cent. less than above prices for iron, except shearmen.

2. Shearmen on modern squaring shears to receive \$1 per turn, but for 25 gauge and lighter, 87½ cents per turn shall be paid. This clause only applies for shearing tin plate.

(The above changes made in scale of 1894 and 1895 by conference January 15, to take effect January 16 and maintain until June 30, 1895.)

EXTRAS.

3. Twenty per cent. added for changed steel and 20 per cent. on net price of iron.

4. Seventeen per cent. added for pickle finished iron and steel, except shearmen.

5. For all sheets sheared into circles on

tin and black plate mills where the loss exceeds 10 per cent. 20 per cent. extra shall be paid.

6. That all sheets cut down to smaller sizes on tin and black plate mills be paid for at scale prices.

Following is the old scale, which we present for purposes of comparison. The extras remain unchanged, but for shearing the old scale made the price for all gauges \$1 per turn.

Gauges.	Rolling steel, 2,240 pounds.	Doubling.	Heating.	Shearing on law or close work on squaring shears.
Nos. 8 to 11	\$2.04	\$0.93	\$0.85	
Nos. 12 and 13	2.13	.96	.90	\$0.99
Nos. 14 and 15	2.45	1.10	1.07	
Nos. 16 and 17	2.24	1.46	1.32	
Nos. 18 to 20	3.62	1.63	1.48	1.59
Nos. 21 to 24	4.07	1.86	1.63	
Nos. 25 and 26	4.57	2.07	1.88	
Nos. 27 and 28	4.63	2.21	2.05	1.71
Nos. 29 and 30	5.30	2.70	2.48	1.76
No. 31	5.40	2.84	2.66	1.78
No. 32	5.65	2.97	2.79	1.88
No. 33	5.99	3.13	2.88	1.98
No. 34	6.64	3.33	3.15	2.20
No. 35	6.97	3.62	3.34	2.30
No. 36	7.43	3.69	3.46	2.46
No. 37	7.52	3.65	3.52	2.49
No. 38	7.60	3.72	3.58	2.52

British Tin Plate Exports in 1894.

Great Britain's total exports of tin and terne plates during the year 1894 show a decrease of 25,891 tons in quantity and of \$5,077,198 in value as compared with the figures for the previous year. The figures given in the Board of Trade returns are as follows: 1893, 379,172 tons, valued at \$25,958,240; 1894, 354,081 tons, valued at \$20,881,042. Tin plate shipments to all countries in the last three months of the year, however, exhibited a considerable gain as compared with those in the corresponding period of 1893, December's increase in this respect being as much as 14,421 tons, 10,600 tons of which are accounted for by the comparative increase in exports to the United States in the last month of the year. The following table gives the amounts of British tin and terne plates sent to foreign countries during the past two years:

Exported to.	12 Months.
	1893. 1894.
	Tons. Tons.
Russia	30,827 23,965
Germany	3,126 3,765
Holland	5,812 5,184
France	11,297 10,416
Portugal, Azores and Madeira ..	5,662 2,851
Italy	4,004 2,987
Roumania	4,286 4,675
United States	255,602 226,879
Brazil	4,329 5,516
Argentine Republic	3,266 3,270
British East Indies	6,190 7,974
Australasia	7,694 11,729
British North America	36,040 27,983
Other countries	21,653 27,467
Totals	379,172 354,081

SCRAP.

JOHN JARRETT of Pittsburgh writes to the New York Herald that, in his opinion, with the slight reduction in wages agreed to by the tin plate workmen, the American mills can be operated with a fair percentage of profit, and in two years' time so increase the output as to control entirely the home consumption.

TEN of the leading canning factories of Baltimore, which have been shut down since October 1, started into operation again on Monday. Other idle plants in the same business are likely to follow suit. This will mean an augmented demand for coke tin plate.

THE LEECHBURG FOUNDRY & MACHINE COMPANY, Pittsburgh, Pa., have contracted to furnish to the Falcon Tin Plate & Sheet Company, Niles, Ohio, a Meata picking machine, having a capacity of about 10 tons of black plates per hour.

EXPORTS of native pig tin from Great Britain in 1894 were valued at \$2,074,512, and foreign tin at \$7,310,626. Both totals show a decline in value, though the quantity of foreign tin re-exported last year exhibits an increase.

THE CO-PARTNERSHIP between George C. Waldo and Frederick R. Phillips, trading as the Phillips Tin Plate Company of Philadelphia, has been dissolved by mutual consent. Mr. Phillips having purchased the interests of Mr. Waldo therein. The tin plate manufacturing business of the concern will be conducted by Frederick R. Phillips at the same location in Philadelphia, under the name of the Phillips Tin Plate Company, 918 Filbert street. The works of the concern are situated at Susquehanna avenue and Philadelphia & Reading Railroad.

THE WHOLE of the men, numbering about 1000, employed at the Cwmffelin Tin Plate Works, Swansea, Wales, were last week given a month's notice, terminating their engagements. There has only been one brief stoppage of these works in the past 25 years. E. Rice Daniel, the managing partner, stated publicly that the notices were given, not with the intention of closing down the works or reducing wages, but to enable the works to be kept going from day to day, until the market becomes sufficiently settled to justify the renewal of customary labor contracts.

REYNOLDS BROS. CAN COMPANY, Havre de Grace, Md., advise us that the report that they have the intention to manufacture tin plates is erroneous. The firm of Reynolds Bros. have been engaged since 1880 in the manufacture of fruit cans, and they also hold various patents in can making machinery. Their product in this line is known in all sections of the country, and they propose to confine themselves thereto. The concern were incorporated on January 1 last by the Reynolds Bros. Can Company.

A PRESS CABLE despatch from Swansea, Wales, reports that at the annual meeting of the Chamber of Commerce of that port, on January 23, Sir John Jones Jenkins, chairman of the Swansea Harbor Trust, addressed the members, saying that the Welsh tin plate industry was threatened with severe competition from the United States, where tin plates would be extensively manufactured in the future. The decline in the Welsh trade being entirely in the shipments to America, he believed that other markets might be opened to make good the loss of trade with this continent. Already, he said, more shipments were sent from England to Russia than were sent to the whole world 40 years ago.

THE CHICAGO STAMPING COMPANY, Green and Congress streets, Chicago, have on exhibition in their sample room some of the new tin plate from which they will hereafter make their milk cans. The plate is of No. 18 gauge and has an unusually lustrous surface. It is made in their own tin plate factory on the premises. The new Morewood tinning machine is used and the company are highly pleased with the excellence of the work which it turns out. It is the intention of the company to begin at an early day the manufacture of a full line of roofing plates and bright plates for the trade.

THE LEECHBURG FOUNDRY & MACHINE COMPANY, Pittsburgh, Pa., have received an order for a Mesta patent pickling machine for the La Belle Iron Works, Wheeling, W. Va., to be placed in the new tin plate plant now being erected by that concern.

THE NEW CASTLE STEEL & TIN PLATE COMPANY, New Castle, Pa., manufacturers of tin andterne plate, have closed a contract with the Morgan Engineering Company, Alliance, Ohio, for a considerable amount of electrical machinery. The order consists of electric cranes and other time and labor saving machines for the manufacture of tin plate.

THE WORKS OF the Tiryda Tin Plate Company, Ammanford, South Wales, have restarted this week, owing to concessions made by the workmen.

McCLURE & Co., tin plate and metals, Pittsburgh, Pa., are furnishing their friends with a memorandum book which is sure to be highly appreciated. It is well gotten up, having a leather back, and the sheets are held together in a clasp, and when all have been used a new pad can easily be inserted. This firm are meeting with an excellent demand for McClure's redipped roofing tin, which is guaranteed to contain 35 pounds of coating per 112 sheets. It is a recognized fact that a very important point in a roofing plate is to secure a uniform coating. This firm state that the above brand of roofing tin is made by a process by which the coating is distributed evenly over the sheet, leaving no thick edges to interfere in working the sheets.

THE TIN PLATE PLANT of the St. Louis Stamping Company, St. Louis, Mo., has been shut down pending settlement of the wage scale with their workmen.

FOLLANSBEE BROTHERS COMPANY, successors to James B. Scott & Co., Pittsburgh, Pa., distribute a neat little circular calling attention to Scott's Extra Coated guaranteed roofing tin. Instead of filling the entire pamphlet with their own claims for the ware they

let others who have used the plates record their experiences. A number of testimonial letters, which are printed in *fac-simile*, speak in the highest terms of this plate.

THE BRITTON ROLLING MILL COMPANY, Cleveland, Ohio, started up one tin plate mill on Monday, the 21st inst., and will have two mills in operation as soon as shipments of tin plate bars are ample. The wages paid will be on the basis of the 30 and 25 per cent. reductions proposed by the manufacturers, and the plant will be operated non-union.

M. M. GARLAND, president of the Amalgamated Association, was in Cambridge, Ohio, last week, for the purpose of organizing a lodge of tin plate workers among the employees of the Morton Tin Plate Company at that place.

LAST WEEK a charter was issued to the Pennsylvania Tin Plate Company of New Kensington, Pa., with a capital stock of \$200,000. The directors are: Barthold Goldsmith of Pittsburgh, Philip Goldsmith, Louis Goldsmith, David Frankenberg and Edward Dinkel-spell of New York City. The plant of this firm is rapidly approaching completion, the contract for its erection having been placed some months since with the Frank Kneeland Machine Company of Pittsburgh, Pa. It will be a modern plant throughout, and the concern will roll their own black plates.

THE ANNUAL MEETING of the Association of Iron and Steel Sheet Manufacturers of Pittsburgh was held in that city last week. The election of officers resulted as follows: J. G. Battelle, Piquis, Ohio, president; W. T. Graham, Bridgeport, Ohio, vice-president; John Jarrett, secretary-treasurer. Directors: B. M. Caldwell, Warner Arms, N. E. Whitaker, W. C. Cronmeyer and B. F. Jennings.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

N. W. SHOWACRE has awarded the contract for heating 22 houses that he is building to F. O. Singer & Co., Baltimore, Md. They will use the Fuller & Warren Company's No 300 hot water boiler, installed according to plans prepared by J. J. Wilson.

CONTRACTS have been awarded by the Public Buildings Commission, at Philadelphia, to McCambridge & Co. and Claridge & Bartholemew for the plumbing supplies for the ensuing year.

THE CONTRACT for heating the Commercial Club, at Richmond, Ind., has been let to Border Bros. of Columbus, Ohio.

GREEN & LOGAN, Bridgeport, Conn., have the contract for the heating and plumbing for a new house being built by Wm. Burg.

AT THE RECENT MEETING of the Norwalk (Conn.) Hospital Association it was voted that the new hospital building should cost not less than \$10,000, and the executive committee was authorized to secure definite plans for the structure.

WM. F. DONNELLY, New Haven, Conn., is to erect a flat building to have a hot water heating plant and a plumbing system.

THE NEW HAVEN HEATING AND PLUMBING COMPANY, New Haven,

Conn., have taken the contract for heating the new Winchester Building, A Bigelow boiler and the H. B. Smith Company's Royal Union radiators will be used. They also have the contract for placing two Rapid heaters in Theo. R. Blakeslee's new house.

BOTSFORD & ENGLISH, New Haven, Conn., have the contract for the plumbing in the residence building for J. D. Hildreth, and for the residence of Mrs. Ives.

S. J. FREEMAN, Hartford, Conn., will expend \$13,000 in remodeling his building, and among the improvements will be a hot water heating plant and a plumbing system.

CLARKSON, SCOTT & Co., Philadelphia, Pa., have been awarded the contract for furnishing an extensive heating plant for the Presbyterian Home for Widows and Single Women at Fifty-eighth street and Woodland avenue.

THOMAS BRADFORD, Danielsonville, Conn., has the contract to put in the steam radiators for Phoenix Hall. There will be six in number, making 600 feet of heating surface in all.

THEODORE PERKINS & Co., Canandaigua, N. Y., have been awarded the contract for putting the steam heating apparatus in the new county jail.

JAMES AHERN, Hartford, Conn., is erecting three houses of two flats each in his city, and it is needless to say that a plumber will have to bid low to get the plumbing contract.

B. D. DUGGAN, 207-209 Lake street, Chicago, will put two No. 621 Richmond furnaces in the flat building of Joseph Leclerc, 62 Sawyer avenue, and one No. 210 Richmond furnace in the building of E. Besenthal, Leavitt and Division streets.

THE EXETER MACHINE WORKS, 32 Oliver street, Boston, Mass., are furnishing two large Exeter steam boilers and a carload of Exeter radiators for the block at Hudson, Mass., for which Alines & Keeler have the heating contract. They are also furnishing a large Exeter boiler and Exeter radiators for the Morse Block, Sharon, Mass.

GEORGE L. ROOD, 79 Lake street, Chicago, is to install a Royal steam heater in the flat building of Garner Bros., Garfield boulevard and Halsted street.

THE CHARLES H. SIMMONS COMPANY, 72-74 Market street, Chicago, have the contract for steam heating in the flat building of Lincoln Brooke, Wabash avenue and Thirty-sixth street.

SHAPLEY & WELLS, Binghamton, N. Y., have the contract for the ventilating plant for the Court House. Their bid was \$1585.

THE CONTRACT for fitting the "Mugrove" Block, at Andover, Mass., for steam heat has been secured by C. S. Shepard of Lowell, Mass.

F. A. WENDELL, Salem, Mass., has been awarded the contract for plumbing the new 12-tenement house of Joseph Lsdeau.

O. S. KENDALL & Co., Worcester, Mass., have been awarded the contract for furnishing the heating plants for the new farm building of the Worcester Lunatic Hospital and the new city engine house at Bloomingdale. In the first named will be set a William Allen & Son's boiler and in the second one made by the Stewart Boiler Works.

STOVE TRADE NOTES.

Ohio Stove Trade.

With one or two exceptions reports from manufacturers of stoves and ranges are discouraging. The foundries having trade with the South are especially blue; the low prices current for cotton and the freezing of the fruit in Florida are cited as among the features discouraging buying of goods by Southern dealers.

Some Northern manufacturers are still shut down, and as larger stocks than usual were carried over from last year, with no increase in the demand, such producers have nothing encouraging to offer. At the same time, while such manufacturers experience dull trade now, they certainly cherish hope for the future, as they are making preparations for opening new departments and otherwise expanding business, which would not be justified if there were not good reason for expecting an improvement during the coming season. For the present, however, while a few dealers and manufacturers are receiving liberal patronage for this time of year, the majority admit that trade is not developing as was expected after stock taking. Some producers even sound a note of warning that if wisdom is not exercised by manufacturers there is reason "to justify the belief that 1895 will be the worst year of all the poor years they have seen recently."

This state of affairs seems to be reflected in the condition of the market for pig iron, which is quiet and easy in tone, but there is some indication of more inquiry if not an increased volume of business in the near future. Money is abundant and accumulating in this section, seeking investment in local and Government securities at exceedingly high values, rather than employment in business enterprises.

The assembly of United States manufacturers in Cincinnati to consider the advisability of forming a national organization have already taken preliminary steps in the movement and at the moment of writing there seems no doubt but that the organization will be completed as was originally intended. This organization will secure united action, legislative and otherwise, for the common good of manufacturing industries throughout the country. Questions of national and international importance have been already and will be further considered and discussed. Energetic action will follow upon the interchange of views and permanent organization.

Cupola Tuyeres.*—III.

BY DR. EDWARD KIRK.

Chenney Tuyere.

The Chenney tuyere, designed by Mr. Chenney, a practical foundryman of Pittsburgh, Pa., now deceased, is a double tuyere very similar in arrangement to the Colliau & Whiting tuyeres, the only difference being that both the upper and lower rows point downward at a sharp angle to the lining.

The Double Tuyere.

The double or two rows of tuyeres appears to have first been designed and put into practical use about 1854 by Mr. Ireland, a practical English foundryman and cupola builder. In Ireland's cupolas, many of which were in use in England about that time, the tuyeres were placed in two rows about 18 inches apart. Those in the upper row were of only one third the diameter of those in the lower row, and twice the number of tuyeres were placed in the upper row as were in the lower row. The slag hole was also used by Ireland in his cupolas, which were run for a great many hours without dumping or raking out, as was the custom in those days. These cupolas appear to have given very good results in long heats, but in short heats they were not so satisfactory, and in more recent patents obtained by Mr. Ireland the upper row of tuyeres was abandoned. The double tuyere was also used in Voisine's cupolas, another English cupola designer and constructor, and in Woodward's steam jet cupola, also an English cupola, many years before they were introduced into this country by Mr. Colliau about 1876.

It is claimed for the double tuyere that the second row consumes the gases which escape with the single tuyere, and, therefore, a great saving in fuel is effected in melting. That a more intense heat is created in the cupola at the melting zone by the double tuyere cannot be disputed, for the destruction of lining is much greater at this point than with the single tuyere; but, on the other hand, that any saving in fuel is effected has not been proven by comparative tests made in melting with the double tuyere cupola and the single tuyere cupola, when properly constructed and managed. On the contrary it has been proven that the single tuyere cupola is the most economical in fuel and lining. That the double tuyere melts iron faster than the single tuyere in cupolas of the same diameter is undisputed, and as between the single and double tuyere it is only a question whether the time saved in melting more than compensates for the extra expense of lining. When a double tuyere cupola is run to its full capacity the consumption of fuel per ton of iron is about the same as the single tuyere, but in small heats it is much greater. This is due to the large amount of fuel required for a bed, owing to the great height of the upper tuyeres above the sand bottom, for the bed must be made about

the same height above the upper tuyeres as above the lower tuyeres in a single tuyere cupola, and no greater amount of iron can be charged on the bed with the double tuyere than with the single tuyere. When constructing or ordering a double tuyere cupola the smallest one that will do the work should be selected, so that the cupola may be run to its full capacity each heat and the best results obtained in melting.

Three Rows of Tuyeres.

A number of large cupolas have been constructed with three rows of tuyeres, for the purpose of doing faster melting than can be done with the single or double tuyere cupola. Probably one of the best melting cupolas of this kind in use at the present time is one constructed by Abendroth Bros., Port Chester, N. Y., to melt iron for stove plate, sinks, soil pipe and plumbers' fittings. This cupola is 60 inches diameter at the tuyeres and 72 inches at the charging door, and is supplied with blast from 36 tuyeres, placed in the cupola in three horizontal rows 10 inches apart, 12 tuyeres being in each row. The tuyeres in the first row are 6 inches square, those in the second row 4 inches square, and those in the third row 2 inches square. This cupola melts 60 tons of iron in four hours, which is probably the fastest melting done in this country for the same number of hours for light work requiring hot iron. In the double or triple tuyere cupola the upper tuyeres may be placed directly over a tuyere in the lower row, or they may be placed between the tuyeres of the lower row at a higher level. In Ireland's cupolas double the number of tuyeres were placed in the upper row as were in the lower row, so that one was placed directly over each tuyere in the lower row and one between. In the modern double tuyere cupola the same number of tuyeres are placed in each row, and the upper tuyeres are generally placed between those in the lower row. The object in placing these tuyeres in a cupola, as stated before, is to supply the oxygen to burn the unconsumed gases escaping from the combination of fuel at the lower tuyeres. If a proper amount of blast is admitted at the lower tuyere the cupola is filled with gases at this point, and it does not make any difference whether the upper tuyeres are placed over or between the lower ones, so long as the tuyeres are only to supply oxygen to consume the gases with which the cupola is filled. If this theory of producing heat by consuming the escaping gases from the combustion of fuel is correct, they can be consumed at any point in the cupola, and the row of tuyeres for this purpose should be placed above the bed, and the gas burned in the first charge of iron to heat it and prepare it for melting before it settles into the melting zone. To consume these gases only the tuyeres should be small, and the number of tuyeres in the upper rows should be two or three times greater than in the lower row so as to supply oxygen to all parts of the cupola, and not permit

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the gases to escape unconsumed between the tuyeres. If the tuyeres in the second or third rows are made too large in proportion to the lower row, the supply of oxygen is too great for the combustion of the gases, and the effect is to cool the iron. In the modern double tuyere cupola this theory is not carried out, for the tuyeres in the second row are made big, and admit such a large volume of oxygen at one point that if they were placed high their effect would be to cool the iron rather than heat it. But they are placed low so as to force the blast into the bed and give a deeper melting zone, and their effect is to cause a more rapid combustion of fuel and do faster melting than is done in the single tuyere cupola of the same diameter.

Greiner Tuyere.

In Fig. 16 is seen the Greiner tuyere device. The novelty of this device consists in a judicious admission of blast into the upper zones of a cupola, whereby the combustible gases are consumed within the cupola and the heat utilized to preheat the descending charges, thereby effecting a saving in the fuel necessary to melt the iron when

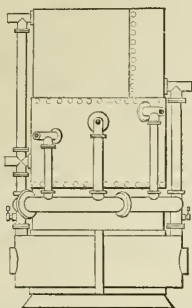


Fig. 16.—Greiner Tuyere.

it reaches the melting zone. This device consists of a number of upright gas pipes attached to the top of the wind box around the cupola, with branch pipes of 1 inch diameter extending into the cupola through the lining and about 1 foot apart, from a short distance above the melting zone to near the charging door. It is claimed that these small pipes admit a sufficient amount of oxygen to the cupola to burn the carbonic oxide produced by the carbonic acid formed at the tuyeres absorbing carbon from the fuel in its ascent. A great saving in fuel is thus effected by consuming this gas and preparing the iron for melting before it reaches the melting zone. A large number of cupolas with this device are in use in Europe and quite a number in this country.

Adjustable Tuyeres.

Tuyeres are sometimes placed in a cupola so they may be adjusted to conform with the size of the heat to be melted or the way the iron is to be drawn from the cupola, and thus save fuel in the bed. They are placed low when the heat is small or the iron is drawn from the cupola as fast as melted, and placed high when the heat is large or when iron is to be held in the cupola for a large piece of work. One of the best arranged cupolas of this kind I have seen is the cupola of the Pennsylvania Diamond Drill & Mfg. Company, Birdsboro, Pa. The

air belt extending around the cupola is riveted to the shell about 4 feet from the bottom plate. From this belt a cast iron air box bolted to the shell extends down nearly to the bottom plate in front of each tuyere. The front of this box has a sliding door extending full length of the box. The cupola shell has a slot in front of each box the full length of the box. On each side of this slot a piece of angle iron is riveted to the shell to hold the lining in place. The slot is filled in with fire brick, and a tuyere opening left at any desired height from the bottom. When it is desired to lower the tuyere the brick are removed from the bottom of the tuyere and placed at the top, and held in place by a little stiff daubing or clay, and when it is desired to raise it the brick are removed from the top and placed at the bottom when making up the cupola. With the Colliar and Whiting style of air belt an adjustable tuyere can be arranged in this way at a very moderate cost, and foundrymen who think they must have their tuyeres placed high so they can make a large casting and only make such a casting once or twice a year, can save a great deal of fuel from the bed by having their tuyeres arranged in this way. The old plan of putting in two or three tuyere holes one above the other, and adjusting the tuyeres during the heat by raising the tuyere pipe from one to the other, is not practicable with the modern way of charging a cupola, and has long since been abandoned.

Lindemann's Folding Oven.

J. P. Lindemann & Sons of Milwaukee, Wis., have brought out a folding oven for oil, gas and vapor stoves, which possesses a number of interesting features. It is an original construction, on which they have applied for a patent. The oven is made in three solid sections, namely, the body, top and bottom, each complete in itself. These sections are entirely automatic in their action, requiring no hooks, screws, bolts or other separate parts to be used in putting the oven together. By inserting the top and bottom in their proper places, the oven is instantaneously ready for use. The body, to which is firmly attached the inside lining, is solidly and perfectly united by means of patent inflexible hinges. This method of construction makes the body and linings one complete and solid section which folds in such a way that it nests solidly. Six ovens can thus be packed in a crate, making a compact package, taking a very low freight rate, and preventing damage to any parts of the oven or spoiling the ornamentation. Ovens shipped in this manner are reduced to one-fifth of the bulk of other ovens. The setting up or taking apart of an oven is so easy and simple that this feature can be made available at any time to save space, either for a dealer or consumer.

While all the qualifications for a perfect knock down or lay down oven are attained, yet none of the features of the flue arrangement of the standard Lindemann ovens have been sacrificed. The flues are constructed to distribute an evenly tempered heat into the oven, allowing the use of the upper and lower shelves at the same time. All the walls are utilized as flues, saving a large amount of heat. The bottom of the oven is supplied with a deflecting disk to prevent burning from below. The escape of the gases is in the top, so that the heat can there be utilized for warming plates, drawing tea, &c. This ar-

range ment has been planned on scientific lines, which have been thoroughly tested by the manufacturers, and have proved very satisfactory in practical use, as shown by the steadily increasing trade which they enjoy. Six styles of folding ovens and nine styles of standard ovens are made, in both tin and Russia iron, to meet all possible requirements for portable ovens. The assortment now presented to the trade is much larger than that of last year. The firm are also large manufacturers of tinware, oil cans and sheet iron goods. They are the sole makers of Acme corrugated elbows, which are perfectly smooth on both sides.

The Troy Nickel Works

of Troy, N. Y., have just issued from the press an exceedingly attractive catalogue and price-list of Alaska stove trimmings which they manufacture in extensive variety. The volume is oblong in its general shape, profusely illustrated, neatly printed, and is bound in paper covers of rich design, stitched with a silken cord of a delicate shade of blue. The front cover is embellished with a design decidedly wintry, while the words "Troy Nickel Works, Manufacturers of Alaska Stove Trimmings, Troy, N. Y.," appear in prominent letters, but with an icy finish. The last page of the cover is embellished with a design somewhat similar in character to that on the front cover, but carrying representations of an Alaska stove lifter and poker, and the words "Always cold when in use." In the introduction we find a request to the effect that if by some unforeseen accident the catalogue falls into the hands of a person for whom it is obviously not intended, he is requested to hand it to the first hardware jobber or stove maker he meets and thereby receive the thanks of the Troy Nickel Works. The goods illustrated within the covers of this interesting volume include Alaska fire sets, shovels, stove lid lifters, pokers, kettle bail handles, tack hammers, stove knobs, turn keys, oven door handles, &c. Attention is also given to Alaska handles for drop oven doors for steel and wrought iron ranges and also to a full line of solid iron nickel plated stove trimmings, consisting of knobs, hinge pins, turn keys, foot rails, &c., on which special discounts will be made on application.

Marks on Fire Place Grates.

A correspondent writes us an interesting letter on the subject of fire place grates, in which attention is called to the fact that many makers of these goods omit to put any marks on them by which the ordering of repairs would be facilitated. He says:

There are many patterns of the most beautiful design in cast iron, but, strange to say, there are no marks on any parts of the grates by which one can identify the manufacturer in case the parts are destroyed or burned out. This is the cause of much perplexity and loss to the dealer. What are the manufacturers of grates thinking about? Suppose a stove fonder should make a line of stoves and place them on the market without a name and number and omit the name of the makers, would not the dealer have a fine time furnishing repairs? That is just the situation with the grate question at the present time. A customer says: "Send a man to my house and put in a dump to my fire place grate." The workman goes to the place designated,

but finds no mark on the grate to tell him who makes it, nor is there any number on the grate. If the old dump is there we make a tracing of it and mail a copy to every manufacturer in the United States, with a view to ascertain who can furnish the necessary repair.

ODD PLATES.

THE LATEST NOVELTY of the advertising sort that the Gobeille Pattern Company, Cleveland, Ohio, are responsible for is a most deceptive imitation of a Western Union telegraph blank, and reads as follows: "Telegram received. Don't order any new patterns without writing us for drawings." Signed, "The Gobeille Pattern Company." While, as we say, the blank resembles the Western Union official blank, the printed matter on it all relates to the Gobeille Pattern Company, but it is distributed in such a way as to give the impression of the other form.

THE CO-OPERATIVE FOUNDRY COMPANY of Rochester, N. Y., have elected the following officers: Nicholas Brayer, president, and E. W. Peck, secretary and treasurer. These with John F. Brayer, S. R. Sill, Frank N. Brayer, Henry Cribben, W. F. Peck, F. J. Wahl and E. Detamble constitute the Board of Directors. The company have declared their twenty-seventh annual dividend, and have never passed one since their organization in 1867. The management has been in the same hands during this period. The treasurer's report showed a clean balance sheet, with no liabilities of any nature, and assets of nearly \$500,000. After the meeting the usual festivities, which are an annual feature, were enjoyed by all present.

AT THE ANNUAL MEETING of the Superior Furnace Company, Little Falls, N. Y., the following officers for the ensuing year were elected: President, Watts Loomis; vice-president, Walter Whitman; directors, W. J. Millegan, Victor Adams, Charles Bailey, T. Dasey, W. T. Loomis and W. H. Switzer.

THE KERNAN FURNACE COMPANY of Utica, N. Y., have chosen the following officers for 1895: President, Francis Kernan; vice-president, William J. Owens; treasurer, Joseph P. Kernan; secretary, William H. Landers; directors, N. E. Kernan, Francis Kernan, Joseph F. Kernan, William H. Landers, William J. Owens and N. E. Deveraux.

THE SCHUYLKILL VALLEY STOVE COMPANY of Spring City, Pa., resumed operations in all departments on Wednesday, January 23, giving employment to a large force.

AT THE ANNUAL MEETING of the stockholders of the Eclipse Stove Company, Mansfield, Ohio, the following Board of Directors were elected: J. H. Mering of Muncie, Ind.; W. A. Gorby of Marion, Ind.; H. M. Lewis, E. B. Tappen and W. J. Tappen. The Board of Directors then elected J. M. Mering president, W. A. Gorby vice-president, W. J. Tappen secretary and treasurer, Allen Blanchard superintendent and H. M. Lewis foreman of the foundry.

SAMUEL N. REEVES of the late firm of Reeves & Horner, Philadelphia, and George E. P. Smiley, who on November last commenced business as manufacturers' agents, under the firm name of Reeves & Smiley, have leased the premises 129 North Second street, Philadelphia, and will occupy them on or about February 1, repre-

senting the following manufacturers: Plymouth Foundry Company, ranges, boat stoves, oil stoves and heaters; Wisconsin Refrigerator Company, Peerless and Zenith refrigerators; Western Stove & Mfg. Company, gasoline stoves; Jas. R. Wotherspoon, Reeves Globe ovens for gasoline, gas and oil stoves, and Silver & Co., gas stoves, oil heaters, &c. They will carry a good stock in the lines they represent, in order to facilitate prompt shipment of orders.

IN REFERENCE to the calendar recently sent out by the Scranton Stove Works of Scranton, Pa., mention was made of a picture of three boys employed at a coal breaker shown in the background of the picture which embellished the card. A great many inquiries have been received by the company asking for an explanation of the picture, and they have replied to the effect that the photograph of the boys was taken just after they had left their work and as they were on their way home. The title given to the picture by the man who produced the engraving was "See 'em run." The boy in the center of the picture is a mule driver, who takes the coal by means of mule and mine car from the miner to the foot of the plane, where it is hoisted to the top of the breaker. The boy at the left is the one who opens and closes the door that distributes the air through the various chambers as the coal is taken out and the empty cars are received back into the chambers. This boy also looks after the switches. The boy on the right in the picture is a slate breaker, who sits at the chute and throws out the slate as the coal passes through the screens down into the cars.

WILLIAM P. WEATHERBY, a well-known and highly respected resident of New Castle, Pa., died recently in the eighty-second year of his age, having been a resident of that place for nearly 60 years. He learned his trade as a stove molder in the foundry of Hugh White, in Cincinnati, going from there to Pittsburgh, then in turn to Beaver, and thence to New Castle, Pa. He was employed as a boss molder in Cunningham's Stove Foundry at New Castle, Pa., for some 40 years. A local paper refers to him as an honest, upright man, beloved by all who knew him and a man who will be missed by a large circle of surviving relatives and friends.

ARTICLES OF INCORPORATION were filed on the 11th inst. at Omaha, Neb., by the Cole Mfg. Company, with a capital stock of \$100,000. The organization is for the purpose of carrying on the manufacture and sale of stoves and hardware specialties. A majority of the capital stock is to be held by H. A. Cole and E. C. Cole in consideration of the transfer by them to the company of all the machinery, patterns, &c., connected with their factory in the city named. The Board of Directors for the first year is composed of H. A. Cole, E. C. Cole and Arthur T. Cole.

EUGENE MUNSSELL & Co. of 218 Water street, New York, will be represented during the year 1895 by the following salesman, who will cover the territory named: George W. Graves will superintend the manufacture of the company's goods and at intervals visit the building trades in the Metropolitan and adjacent cities. C. W. Yasinski and E. S. Coyne will look after the retail trade in New York City, Brooklyn, Jersey City and Newark; Charles E. Coleman will cover New York, Massachusetts and Western Connecticut, and William W. Swan will cover New Jer-

sey, Connecticut and Long Island. The above mentioned salesmen are now visiting the trade in their respective sections.

BRIDGEFORD & Co. of Louisville, Ky., have just about completed new warehouses to replace those destroyed by fire in the latter part of 1893. With the additional machinery which the company have introduced, they expect to be in a far better position for promptly meeting the demand of their extensive trade than at any previous time in their history.

S. CHENEY & Son of Manlius, N. Y., have improved their facilities for fighting fire by putting in a number of additional hydrants.

THE GEORGIA STOVE WORKS of Atlanta, Ga., have about ready for the market a six hole range adapted for using coal and wood, and also a new wood and coal cook stove. These goods are very attractive in appearance, being substantially mounted and embodying the modern improvements. The makers expect for them a large and gratifying demand.

THE SYRACUSE STOVE WORKS of Syracuse, N. Y., have brought out a new single oven range for the season of 1895, it being offered in both portable and brick set form. The company have lately installed a sprinkler system throughout their plant, putting in a 500-gallon fire pump, and thereby securing a lower rate of insurance.

THE BLOOMINGTON STOVE COMPANY of Bloomington, Ill., are getting out a new line of 16 sizes and styles of cook stoves and ranges, and constructing a novelty in the shape of an all cast steel range, which is being offered in 18 styles and sizes. The makers feel that this steel range will prove very popular with the trade and meet with a large demand.

THE BRAND STOVE COMPANY of Milwaukee, Wis., are adding to their already extensive assortment of stoves and heaters a new line of cooks and ranges and a new line of furnaces.

CREA, GRAHAM & Co. of 153 Rebecca street, Allegheny, Pa., are bringing out a new line of natural gas ranges and gas heaters, embodying the latest improvements. They have improved and refitted a line of parlor stoves and added two sizes of a cottage parlor to their assortment.

THE CLEVELAND CO-OPERATIVE STOVE COMPANY of Cleveland, Ohio, are offering the trade this year three sizes of new heating stoves and intimate that they have under way a construction that will prove a decided surprise.

L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis., are getting out the patterns for a line of furnaces which can be sold at a low price, and also propose to bring out a new soft coal heater.

THE NEW RANGE which the B. C. Bibb Stove Company of Baltimore, Md., have brought out under the name Tuxedo is made with right and left hand fire box and large oven. It is offered the trade in both portable form and brick set and embodies the latest improvements.

THE HOFFMAN RUSSELL COMPANY, 82 Lake street, Chicago, having discontinued contracting in the city. W. A. Bowron will assume this branch of the business and act as city sales agent for the Triumph furnaces.

THE FERROSTEELE COMPANY of 63 and 64 Wade Building, Cleveland,

Ohio, are about placing on the market some new sizes of their Ferrosteele ranges, which were very popular last year. The company report that their line of Ferrosteele registers is being well received at the hands of the trade.

SAM S. UTTER, 113 Beekman street, New York, received during the past week a number of gratifying orders from his agents in the West. We are advised that the sales of oil stoves thus far in the month of January were in excess of those of December or for the corresponding period of many previous years.

H. WATERMAN, 107 Beekman street, manager of the New York branch of the Cleveland Foundry Company, has recovered from an attack of the grip, which kept him from his desk for several days. We understand that the company which he represents have lately shipped to Japan and Corea a large order for oil stoves.

In *The Metal Worker* January 19, in referring to two of the representatives of the Michigan Stove Company, the names were erroneously given through the changing of a letter. Their representative who will continue to visit the trade in New York and Pennsylvania is Frank P. McCanna and their representative in Northern Michigan is A. H. Dane.

HART & CROUSE of Utica, N. Y., have issued an exceedingly attractive catalogue of hot air furnaces for the season of 1895. The printing is upon good paper and the binding in paper covers of a delicate shade of pink, with side title consisting of the name and address of the company and an indication of the line of goods manufactured embossed in script letters. The opening pages are devoted to a chapter on furnace heating, in which mention is made of the company's Royal, Prince Royal, Victor and Imperial heaters, after which are presented illustrations of those goods, together with brief descriptive letterpress covering the styles, sizes and prices. Directions are given for setting brick set and portable furnaces, and numerous tables show the capacity of pipes, registers, &c.

AT THE ANNUAL MEETING of the Auburn Stove Foundry Company, held at Auburn, Maine, on the afternoon of Thursday, January 10, the following directors were elected: H. W. Hutchins, A. L. Goss, H. Fairfield, Dr. E. S. Coan, S. Record, George M. Briggs and George W. McFadden. After the meeting of the stockholders a directors' meeting was held at which the treasurer's report for the past year was examined and approved. The directors elected H. Wesley Hutchins president and T. H. Roberts treasurer for the ensuing year. It was decided to do away with the office of clerk, and hereafter the duties will be performed by the last named official.

THE STOVE FOUNDRY of Floyd, Wells & Co., at Royersford, Pa., resumed operations on Wednesday of this week.

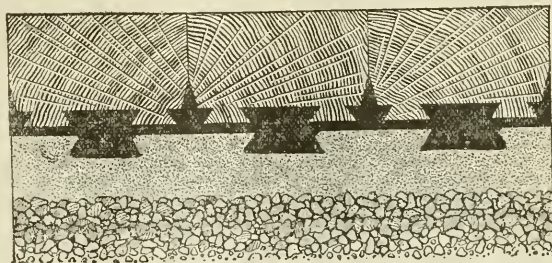
THE BUCKWALTER STOVE COMPANY's foundry, Royersford, Pa., started up January 23 and will run three days a week.

THE MICHIGAN STOVE COMPANY, Detroit, Mich., have lately issued an interesting announcement relative to the scheme of advertising stoves and ranges by giving practical demonstrations of their merits in the shape of what they designate as "cooking carnivals." In connection with the announcement is a copy of a half page advertisement in-

serted in a local paper by the Lowell Hardware Company of Janesville, Wis., which is said to have produced results that warranted them in ordering from the company a full carload of Columbian-Garland steel ranges. This, the company state, goes to show the result of judicious advertising, and they trust their customers will profit by using the columns of local papers, always employing the Garland trade-mark, any size cut of which the company will furnish dealers free of charge. At the store of the Lowell Hardware Company a range was in full operation every afternoon and evening, at which time a free lunch of hot biscuits and coffee was served.

Wood-Block Flooring.

A form of flooring which after many years of trial has become popular in the chief countries of Europe has lately been introduced into the United States by James G. Wilson, well known manufacturer of rolling partitions, rolling steel shutters, Venetian blinds, &c., No. 74 West Twenty-third street, New York City. This flooring consists of wooden blocks about 18 inches long and from 2½ to 3 inches wide, varying in thickness from 1 to



Section through Wood-Block Flooring.

1½ inches. The blocks are made from carefully selected lumber and are molded and cut by machinery designed especially for the purpose, thus insuring, when laid, a perfect fit and accurate joints. The block flooring is laid upon a cement foundation and secured to it by means of a bituminous compound which not only serves as a damp and vermin proof course, but also as a double dovetail key, binding the wood floor and the concrete foundation into a solid, immovable structure. The foundation for the floor may be of any fire proof material, such as brick, terra cotta tiles or coarse concrete. When this is dry, and a few days before the wood floor is to be laid, the top or finishing layer of Portland cement concrete, ranging from ¾-inch to 1½ inches in thickness, is floated on and brought to a dead level. While this is still plastic a multiple plow is run over the surface, cutting out parallel dovetail channels, which form an anchorage for the blocks. The surface thus prepared is permitted to dry, and when hard a hot bituminous compound is poured on, entering and filling the channels in the concrete and overflowing the surface to the required thickness. Into this hot compound the wood blocks are then pressed in such a way that every one is firmly anchored to its foundation. The illustration which is presented represents a section through the floor, showing first a course of rough concrete, then the cement upon which is the bituminous compound, and upon this in turn the wooden blocks of the flooring. This form of flooring is referred to by Mr.

Wilson as being noiseless and warm, indestructible and impervious to dry rot, vermin, dirt, dampness and drafts. It is especially adapted for public and private buildings, and constitutes what is designated as an "ideal floor." The wooden blocks may be arranged in different ways, giving patterns of pleasing variety. Samples and estimates can be obtained on application to Mr. Wilson, at the address given.

ARTICLES OF INCORPORATION have just been filed of the Jeffersonville Corrugating & Roofing Company. The capital stock is \$10,000. President, P. C. Donovan; vice president, Thomas Fanning; secretary and treasurer, R. M. Martin. The latter, who for years has been manager of the Patton Mfg. Company, will have general charge of the corrugating works. His experience is large and the new company are assured of the best management. This company will manufacture all kinds of iron and steel roofing, but will pay most attention to corrugated and V-crippled roofing.

In spite of the depressed condition of business in 1894 the number of new textile mills established in the United

States was very large, especially during the latter half of the year. The *American Wool and Cotton Reporter* places the number of new plants erected at 263, the Southern States making a particularly good showing. The record by States for the year is as follows: New York, 38; Pennsylvania, 36; North Carolina, 26; South Carolina, 23; Georgia, 19; Massachusetts, 15; Maine, 11; Virginia and Rhode Island, 8 each; Texas and Connecticut, 7 each; the remainder being divided among the other States.

An important development of the present gold exporting movement from New York was made public last week, namely, the purchase of large quantities of refined gold bars for export by foreign banking houses in place of gold coin. Receipts of refined gold at the United States assay office in Wall street have fallen off nine-tenths in volume in consequence of the metal having been purchased from the agents of the Western refineries by exporters, who are content to pay a premium of \$1 for every \$1000 in gold bars rather than ship gold coin, which is subject to loss by abrasion.

The steamer "Australia," which sailed from the port of San Francisco for Australia on Monday, carried as part of her cargo 2000 stands of arms and 75,000 rounds of ammunition for the Hawaiian Government.

TRADE REPORT.

The Iron Market.

Pig Iron.—Transactions on a large scale have been extremely few in the New York market. The same may be said of inquiries for round lots. There is, however, a very fair business in lots of moderate size, chiefly for prompt and near future delivery. In prices no changes of importance have taken place, but the market shows the same easy tone that has prevailed for some time past. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Dull and heavy is about all that can be said in regard to the Philadelphia Pig Iron market. There is plenty of metal at the old prices, but as buyers are scarce and extremely cautious, it is difficult to place round lots without conceding something in their favor. It is one of the markets that cannot be quoted with exactness, as one may accept a price that another would hardly take into consideration, and, *per contra*, still another whose requirements are very stringent might pay a price that another would consider entirely too high. Then again there is the question of quantity, nearness of point of delivery, terms of payment and matters which easily make 50¢ @ 75¢ per ton difference in a quotation without affecting actual values. Making all allowances for matters of this kind, however, the fact still remains that good buyers can do better than they could a month ago, due to fuller supplies and a greater pressure to secure orders. Holders claim that nothing could be had at less than our inside quotations, but as bids are not made for any but small or medium sized lots, it remains for the future to determine whether current quotations will be broken or not. Philadelphia and nearby deliveries are quoted as follows, and for some brands 20¢ @ 30¢ less at such points as Harrisburg, York, Baltimore, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

The volume of business in the Chicago market has been somewhat better than that of the previous week, and yet trade was not particularly active. The largest contract reported was for 1000 tons of local iron, and several others were for lots ranging from 200 to 500 tons. Some little business was done in Southern Iron, but Lake Superior Charcoal continued very quiet. Prices are firm on local iron, but Southern appears to be inclined to weakness, evidently owing to the accumulation of stocks on furnace banks. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.50
Southern Coke, No. 3.....	9.75 to 10.25
Southern, No. 1, Soft.....	10.00 to 10.50
Southern, No. 2, Soft.....	9.75 to 10.25
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	13.50 to 16.00
Other Ohio Silvery.....	14.25 to 14.50

Sales of Pig Iron in the Pittsburgh district have been small, and there is not much pressure on the part of furnaces to dispose of their product. The feeling prevails that iron will bring better prices in the second quarter of the year, and the probability of slightly higher prices for Ore is having its effect. Quotations are given as follows:

No. 1 Foundry.....	\$10.50 to \$10.65, cash
No. 2 Foundry.....	10.00 to 10.25 "

Although no new papers have been developed in the local iron situation at Cincinnati during the past week it is evident that a more hopeful tone prevails, if not an improved volume of business. Notwithstanding it is reported that iron is accumulating in both North and South, the surplus is not sufficiently great to cause large producers to weaken; even smaller stacks are feeling more independent, although they are still disposed to accept an order of a desirable character even if it is necessary to shade the prices made by larger furnaces. Pipe works, which a short time since were melting heavily even to the extent of running double turns, are less busy now, but this is the usual experience at this season, while there is good reason to anticipate large purchases during the spring and summer months. Local commission men have experienced a fair sum of small orders during the week and at the close several large orders of moment are pending. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	14.75 to 15.00
Lake Superior Coke, No. 2.....	10.75 to 11.25
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50
Bessemer.....	11.65 to 12.00
Standard Southern Car Wheel.....	15.75 to 16.75
Lake Superior Car Wheel.....	15.00 to 15.50
Malleable.....	14.25 to 14.75

As regards the St. Louis Pig Iron market there is no improvement to note in the demand, although prices seem just a trifle more steady. There is still some low priced iron being offered, but the major part of this iron is either not up to the standard or else is made by a furnace whose reputation for quality is not the highest. Legitimate brands command the following prices: No. 1 Foundry, \$10.25 @ \$10.50; No. 2 Foundry, \$9.75 @ \$10. A few sales of No. 2 Foundry are reported, none of which will run over 400 tons. Aside from this the market is quiet but not weak. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.25 to \$10.50
Southern Coke, No. 2 Foundry.....	9.75 to 10.00
Southern Coke, No. 3 Foundry.....	9.25 to 9.50
Southern Car Wheel.....	16.25 to 16.75

Metal Market.

Pig Tin.—The reaction in prices mentioned last week was carried forward in the earlier days of this week, bringing wholesale prices up with a rush nearly 4¢. Simultaneous with this rise was a sharp upward movement in London, and the deal had every appearance of having been engineered to squeeze operators who were short on January contracts, among whom were some of the bear leaders. After this squeeze, and a sudden falling off of buying orders, prices dropped almost as rapidly as they had previously advanced, and the market weakened. On Thursday, however, a further advance of nearly 1¢ was recorded, and the market closed strong. A very fair jobbing business has been carried out, and quite a considerable amount of Tin has changed hands. Prices for small lots of Straits from store rule at about 15¢ per lb.

Copper.—Dealings have been mostly of routine type, but to all accounts these involved a fairly liberal quantity of metal, chiefly for delivery during the next 30 days. Between the new business and consignments to Europe enough stock has been disposed of to give the market distinctly firm tone, and outside lots at a shade under the market that were about not long ago seem to have disappeared, for the time being at least. The smaller retail business doing is moderate in character, and prices for small parcels are unchanged at last week's quotations—namely, 15¢ per lb.

Sheet Copper.—Dealers report a fair run of orders and good inquiry for Cornice Copper, although the volume of actual business done is behind the average in amount. Improvement is, however, looked for as the year progresses, and a good business is anticipated by the spring.

Pig Lead.—Little change has taken place during the week. Demand keeps up well and the market retains very firm tone. The general situation is regarded as strong, and consumptive requirements, it is calculated, will keep the market so for some time to come. No change has been made in the ruling rates for small lots of American Pig from store, for which 3½¢ @ 3¾¢ is quoted.

Spelter.—A slow market, with very flat undertone, is about all that there is to report. The buying has not improved in any particular, and the demand has been perfunctory in the extreme. In prices there is no change to note, although the market shows rather weak tone. Western in small quantities is quoted at 4¢ @ 4¼¢, according to brand. Fancy brands fetch the usual premium.

Antimony.—Dealings are of about the same volume and nature as for some time past. Prices in small lots do not vary much, remaining at about 8¢ for Hallett's and 9¼¢ for Cookson's.

Nickel.—The market is quiet, with prices at 35¢ @ 40¢, according to size of order.

Tin Plate.—Prices that proved attractive and continued reports of re-

duced production in Wales led to quite a good business in Plates for future delivery early in the week. Later the demand appeared to fall away again and relapsed into dullness. Small spot business has partaken of the general character that has marked it for some weeks past. In the aggregate, despite low prices, it has been considerably below the average of the season. The tame condition of the market in general has proved a considerable disappointment to those who looked for a revival in the demand for Plates this month. The market shows rather a soft tone, although prices remain nominally at the same level as last week.

A special London cable dispatch of January 23 to *The Iron Age* reports as follows in regard to the British Tin Plate market: In the Tin Plate market dullness is accentuated owing to weaker advices from New York and reports of restarting American mills. There is very little demand. Ordinary Bessemer Cokes sold at 9/3. Operators waiting. Many makers are refusing orders at current rates, preferring to shut down. Prices f.o.b. Wales are:

Bessemer Cokes, IC 14 x 20.....	@	9/3
Siemens Cokes, IC 14 x 20.....	9/6 @	9/9
Ternes, 20 x 28.....	18/6 @	21/
Charcoals, IC 14 x 20.....	10/6 @	12/6

Sheet Iron.—The general demand for Black Sheets continues only fair, and some of the mills are reported to be actively canvassing for orders. Galvanized sheets are in somewhat better demand than Black Sheets. Jobbers' quotations for small lots of No. 27 Common Iron from store are about 2 65¢; and Galvanized rules at 75 and 5 % @ 75 and 10 % off.

Chicago Report.

Scrap.—Trade is very light. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	
Machinery Cast.....	5.50	
Malleable Cast.....	5.00	
Stove Plate (free of burnt).....	4.00	
Burnt Iron and Grate Bars.....	3.00	
Sheet Iron and Hoops.....	2.00	
Flow Steel and Breaking		
Stock.....	4.00	
No. 2, such as Shovels, Hoes,		
&c.....	3.00	
Old Boilers—whole (Iron).....	3.00	
“ (Iron)—cut in single		
Sheets and Rings.....	5.00	
Old Gas-Pipe and Boiler		
Tubes.....	5.00	
Cast Borings.....	3.00	
Turnings.....	4.00	
Horseshoes.....	7.50	
Copper Bottoms.....	6 ¢	
Copper Clips and Heavy.....	7 ¢	
Heavy Brass.....	6 ¢	
Light Brass.....	3 ¢	
Pipe Lead.....	2 1/2 ¢	
Lead.....	2 ¢	
Zinc.....	2 1/2 ¢	
Rubber.....	4 ¢	

Anthracite.—Business is extremely dull and prices are weak. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.35	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8 10	8.35
Sioux City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.	
COLORADO FUEL & IRON COMPANY.	
Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

CONDITION OF THE Hardware Trade.

THE PAST WEEK has witnessed about the increase in the volume of business which is to be expected at this time. Travelers are beginning to be heard from and generally report prospects of a gradual improvement in trade. The tone of the market is unchanged and several lines of goods continue low and somewhat irregular in price, the tone of the market being rather weak and unsettled. The trade are purchasing in moderate quantities and buyers are watching the market closely to see the first indications of a reaction from the unprofitable prices at which many goods are selling. There is comparatively little complaint in regard to collections and the trade generally appear to be in good financial condition.

Advices from Chicago.—Jobbers of Shelf Hardware report that, while the business of the past week was only fair, orders the early part of the present week showed a marked improvement in number and size. The year has started out in very much better shape in every way than 1894. A peculiarity of the present trade is that the demand is running largely to miscellaneous goods. Excellent orders are being entered for spring goods to be shipped by the first of March, and all kinds of novelties in the house furnishing lines are moving freely; mechanics' tools are also in much better request than at any time last year, but in the matter of staple goods business is comparatively slow. This is ascribed, first, to the weakness recently developed in these lines, so that buyers are not yet assured that actual bottom has been reached, and second, to the fact that the manufacturers are more largely than ever selling directly to the trade. Business in mixed carloads of Barb Wire and Wire Nails from factory is larger than usual. Another feature of the present trade is that buyers of Tinware and House Furnishing Goods, as well as general Hardware, are urging very prompt shipments, showing that stocks are light and that consumers are buying much more freely than for some time past. The outlook is regarded as very encouraging from the standpoint of Hardware jobbers.

Notes on Prices.

Wire Nails.—The volume of business during the past week has not been specially heavy, but the manufacturers report a good many inquiries, and some orders have been placed. The tone of the market is unchanged. Small lots from store in New York are quoted regularly at \$1.15.

Advices from Chicago.—The movement of factory lots is reported by manufacturers as quite discouraging. They have had a lighter demand from the jobbing trade, which is evidently

caused by the unsettlement of prices as reported last week. Jobbers themselves are experiencing quite a light demand. The quotation is now \$1.05 for small quantities for direct shipment from factory, or \$1.10 for shipment from stock in Chicago.

Cut Nails.—The condition of the Cut Nail market is not unlike that of Wire Nails. Prices are unchanged, small lots from store, New York, being quoted at 90 to 95 cents.

Advices from Chicago.—Manufacturers have had a quiet week. Orders have been light, but prices are unchanged, rates being still quoted \$1 on small lots from stock.

Barb Wire.—The volume of business is not especially heavy and prices are unchanged. They are represented by the quotation of \$1.85 for carload lots of Four-Point Galvanized at mill, but on large lots this figure is shaded and \$1.80 given in some cases.

Advices from Chicago.—The factories in this vicinity are now all busy turning out stock for spring shipment. Business is quite good in the shipment of small lots from factory to the retail trade. Jobbers' quotations are \$1.55 to \$1.60, f.o.b. cars Joliet, for carloads of Painted and \$1.90 to \$1.95 for Galvanized, and \$1.80 and \$2.05, respectively, for small lots to be shipped from stock in Chicago.

Lanterns.—The following are the prices on the Tubular Mill and Crystal Lanterns described in our issues January 12 and 19, as put on the market by R. E. Dietz Company, 60 Lighthouse street, New York.

Tubular Mill Lanterns.....	Per doz.
Crystal Lanterns.....	\$12.00
	6.00

Eave Trough.—As noted last week, the list prices on Eave Trough were changed at a meeting of the United States Eave Trough and Conductor Pipe Association, held at Cincinnati, Ohio, on January 9. The full revised list, which will go into effect on February 1, 1895, is as follows:

No. 28 Gauge Galvanized Trough, Lap Joint.		Per foot.
3 inch size, 6-inch girt.....	Per foot.	
3 1/2 " " 7 " ".....	\$0.13	
4 " " 8 " ".....	.14	
4 1/2 " " 9 " ".....	.16	
5 " " 10 " ".....	.17	
5 1/2 " " 10 " ".....	.19	
6 " " 12 " ".....	.23	
7 " " 14 " ".....	.27	
8 " " 16 " ".....	.30	

For heavier gauges than No. 28 add the following advances to No. 28 list. For No. 27, 1 cent; No. 26, 2 cents; No. 24, 6 cents; No. 22, 10 cents, and No. 20, 15 cents, all per foot.

Tin Eave Trough, Lap Joint.		
	IC	IX
	Terme.	Terme.
	Per foot.	Per foot.
3 inch size, 6-inch girt.....	\$0.08	\$0.09
3 1/2 " " 7 " ".....	.09	.10
4 " " 8 " ".....	.10	.11
4 1/2 " " 9 " ".....	.11	.12
5 " " 10 " ".....	.12	.13
5 1/2 " " 12 " ".....	.14	.15
6 " " 14 " ".....	.16	.17
8 " " 16 " ".....	.19	.20

For Slip Joint Eave Trough add 1 cent per foot to the above lists of both Tin and Galvanized Lap Joint, and for Double Bead Trough add 3 cents per foot to the list prices for the same size and style, but Double Bead Trough must have 2 inches more girt than Single Bead of the same size.

The list prices on Roof, Quarter Circle, O G and Box Gutters were changed to the following:

No. 28 Gauge Galvanized.

Style A.		Per foot.
14-inch girt.	.....	\$0.35
20 "	.....	.50
24 "	.....	.60

Style B.		Per foot.
15-inch girt.	.....	.37
20 "	.....	.50
24 "	.....	.60

Style C.		Per foot.
12-inch girt.	.....	.30
14 "	.....	.35
16 "	.....	.40

Style D.		Per foot.
15-inch girt.	.....	.37
18 "	.....	.45
20 "	.....	.50

Style E.		Per foot.
15-inch girt.	.....	.37
18 "	.....	.45
22 "	.....	.55

Style F.		Per foot.
18-inch girt.	.....	.45
20 "	.....	.50
22 "	.....	.55

Style G.		Per foot.
18-inch girt.	.....	.45
20 "	.....	.50
22 "	.....	.55

Style H.		Per foot.
14-inch girt.	.....	.35
16 "	.....	.40
18 "	.....	.45

Style J.		Per foot.
18-inch girt.	.....	.54
20 "	.....	.60
24 "	.....	.72

The list prices on Round Ridging of No. 28 gauge, galvanized, were changed to the following:

	Per foot.
1½-inch roll, 7-inch girt.	\$0.14
1½ " 8 " "	.16
2 " 10 " "	.19
2½ " 12 " "	.23
3 " 15 " "	.28

The list prices on Angle Ridging of No. 28 gauge, galvanized, were changed to the following:

	Per foot.
3-inch apron.	\$0.13
3½ " "	.14
4 " "	.16

Old Metals.—There is a fair inquiry, but only moderate business as yet, most of which is at about the prices that have ruled for several weeks. The following quotations represent the current rates paid by dealers in this city:

Heavy Copper.	.....	7¢
Light and Tinned Copper.	.....	6½¢
Heavy Brass.	.....	4½¢
Light Brass.	.....	3½¢
Lead.	.....	2½¢
Tea Lead.	.....	2½¢
Zinc.	.....	2½¢
No. 1 Pewter.	.....	10¢
No. 2 Pewter.	.....	5½¢
Wrought Scrap Iron, gross.	.....	
Heavy Cast Scrap.	.....	\$7.50 @ \$8.00
ton.	.....	
Stove Plate Scrap.	.....	7.50 @ 8.50
Burnt Iron.	.....	gross ton 5.00
	.....	gross ton 3.00

Old Rags, Paper, &c.—Demand is fair and dealers' purchasing prices substantially the same as those quoted last week, namely:

No. 1 White Rags.	.....	3¢ @ 3½¢
No. 2 White Rags.	.....	2½¢ @ 2½¢
Mixed Rags.	.....	1½¢ @ 1½¢
Blues and 3ds.	.....	1½¢ @ 1½¢
Hard Sized White Shavings.	.....	1½¢ @ 1½¢
No. 1 White Book Shavings.	.....	1½¢ @ 1½¢
No. 2 White Book Shavings.	.....	1¢ @ 1½¢
Light Book Shavings.	.....	¾¢ @ ¾¢
No. 1 Mixed Shavings.	.....	¾¢ @ 1¢
No. 2 Mixed Shavings.	.....	¾¢ @ ¾¢
No. 1 Printed Books.	.....	1¢ @ 1½¢
Ordinary Mixed Books.	.....	¾¢ @ ¾¢
Newspapers.	.....	¾¢ @ 2½¢
No. 1 Manila Paper.	.....	1½¢ @ 1½¢
No. 2 Manila Paper.	.....	¾¢ @ ¾¢
Bogus Paper.	.....	¾¢ @ ¾¢
Common Paper.	.....	¾¢ @ ¾¢
Straw Chins.	.....	¾¢ @ ¾¢
Binders' Chippings.	.....	¾¢ @ ¾¢
Jute Butts.	.....	1½¢ @ 1½¢
No. 1 Jute Bagging.	.....	1¢ @ 1½¢

Mixed Bagging.	.....	1½¢ @ 1½¢
No. 2 Bagging.	.....	¾¢ @ ¾¢
Hemp Twine.	.....	1½¢ @ 1½¢
Manila Rope.	.....	1½¢ @ 1½¢
Mixed Rope.	.....	1½¢ @ 1½¢

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, gross.	.....	\$0.03½ @ .04
Rubber Shoes, carloads, delivered at factory.	.....	.05½
Rubber Shoes, less than carloads.	.....	.04½
White Wringer Rolls.	.....	.04½
White Syringes.	.....	.03½

Trade Notes.

THE WEXLER METAL GOODS MFG. COMPANY of New York City have obtained letters of incorporation, with capital of \$10,000. Directors, Judah Moses, J. Harris Balston, Arthur S. Ronald of Brooklyn and E. F. Kroyer of New York City.

THE LINDNER & REMIG MFG. COMPANY of New York have been chartered to manufacture machines wherewith to manufacture gas, electric, water, steam and other fittings and fixtures; capital, \$100,000, and directors, Ernst Lindner of New York, Theo. H. Mulch of Mount Vernon and Phillip W. Remig of Brooklyn.

THE CLONBROCK STEAM BOILER COMPANY were incorporated at Albany, N. Y., on January 17, to manufacture steam boilers and steam generators, steam fittings, smoke pipes, tanks, &c., in Brooklyn. The capital of the company is placed at \$200,000, and the directors are Thomas F. Morrin of Jersey City, Thomas J. Lawler and John Harlin of New York City and M. B. Morrin of Brooklyn.

THE F. H. LAWSON COMPANY, Cincinnati, Ohio, Tin Plate and Metal dealers and manufacturers of Tinware and specialties, have made a large number of extensive improvements in the way of new machinery and modern appliances in the factory purchased by them from the late firm of Geo. D. Winchell Mfg. Company. They are now in possession of much better facilities for turning out goods in large quantities.

HAMILTON'S BEST REDIPPED AMERICAN ROOFING TIN, manufactured by John Hamilton, Pittsburgh, Pa., is being used on the roof of the new Post Office Building at Haverhill, Mass. The above brand of Roofing Tin has been on the market for some years, and has met with a constantly increasing demand, although sold at considerably higher prices than many other brands on the market. It has been used in roofing some of the largest Government buildings and school houses in the country and has given entire satisfaction wherever used.

THE NIAGARA STAMPING & TOOL COMPANY, Buffalo, N. Y., have just issued a small illustrated catalogue of some special machines and tools. The circular calls attention in the early pages to Squaring Shears of various sorts; then come Circle Shears and Slitting Shears. The next division relates to Presses of many different kinds adapted for general and special purposes. These include heavy Power Presses and Foot Presses, and at the close reference is made to Crimpers, Seaming and Squeezing Machines. All the tools and machines are illustrated, and information is given, with price-lists and particulars of sizes and weights, &c.

CHAMPION STOVE CLAY for lining Stoves and Ranges and repairing Stove Linings is the subject of an announcement elsewhere in this issue by the Bridgeport Crucible Company, Bridgeport, Conn. Prices are quoted in bags for domestic use and in barrel lots for the trade.

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THE METAL WORKER.

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Building Trades Exhibition.

The International Building Trades Exhibition will be held this year in Royal Agricultural Hall, Islington, London, England, from March 25 to April 4. This exhibition is for the purpose of making a representative display of materials and appliances connected with the building trades. Among the subjects specially mentioned by the International Building Trades Exhibition Company of 222 Strand, London, W. C., are brick and tile making, iron work, pottery, terra cotta, wood work, ventilation, heating, sanitary ware, decoration and paving. We understand that all branches of the building trades in London are co-operating in the movement, and it is expected that the display to be held in April next will prove as pronounced a success as the one last held under the auspices of the company named. The consultative council, consisting of men of high repute in the professional and manufacturing world, are taking special interest in this exhibition for the purpose of securing a greater development of trade in connection with the building industry.

Overcrowded New York.

The problem of overcrowding in the poorer quarters of great cities has long engaged the anxious attention of social economists and philanthropists throughout the civilized world. It is unfortunately one of which the difficulties seem to grow more intense year by year. This fact is strikingly illustrated in the report of the special citizens' committee recently engaged in an inquiry into the tenement houses of New York City. This report brings out some interesting and startling facts connected with the extraordinary growth in density of the city's population within recent years.

Only a few years ago, before the general adoption of the "flat" system, the average number of residents to a house in New York City was 14. Now, the average has risen so high that, in some sections of the city, it has reached four times that figure. In the Tenth Ward, for example, the average is 57 persons to a house, while in the adjoining ward, the Seventh, the number is 43 to a house. The tremendous density of the city's population, more particularly on the east side of the town, is, of course, mainly due to the fact that, by improved modern methods of construction, builders have been enabled to utilize the available space much more profitably—to the owners and landlords—than formerly. Yet, taking into consideration the additional accommodation skyward thus provided, the actual accretion of population has far outstripped the enlarged accommodation.

Health and Morals.

The Tenth Ward of New York City, previously referred to, has, for instance, with an area of 110 acres, a total population of nearly 70,000. This is at the rate of about 636 persons to an acre, an average certainly in excess of any section of like size in any other city of the United States and an exhibition of crowding which is hardly to be rivaled in the world. The difficulty of securing and enforcing adequate sanitary measures under the conditions afforded by such a lamentable state of things as must exist among a community dwelling in such densely packed masses can be readily apprehended. That the sanitary laws of New York City are so well administered, and that the urban death rate is so comparatively favorable under these circumstances, speaks well for the city's health department. When, however, the moral aspects are regarded, of the herding together of human beings in such a manner, the situation of the masses in the thickly settled east side offers a problem which may well engage the most earnest and serious consideration of those to whom the future well-being of the race is in any degree a matter of solicitude.

Bids on Heating.

The steam or hot water heating contractor, in making up his estimates, naturally looks upon profit as an indispensable item; but he should not lose sight of the fact that the all important consideration is a careful and absolutely correct computation of the cost. The successful man in any line of business is he who never is deceived in the cost

of any work for which he contracts. Long experience is often the only qualification that may be safely relied upon for calculating the cost where the work is difficult or its character precludes a perfect idea of the labor required being formed until the job is under way. In digging a pit for a boiler recently a spring was struck by the contractor, and, as a cast iron contract had been made, it cost more to dispose of the spring successfully than the entire price of the job, profit and all. Such things will occasionally be met, but in the majority of cases the only obstacle to a correct estimate of the cost being made is a want of care in making it up. It is a work that requires patience, a thorough acquaintance with the price of material and thorough practical knowledge of how the work should be done in order to foresee expensive details that would otherwise be overlooked. As a rule, too little time is given to making estimates. It is tedious work and not inviting to those who eagerly take part in the solicitation and sale. Few are ready and willing to go carefully over a cost calculation and the list of items to see if it is correct, or if anything has been omitted that should be included, and whether good judgment has been used in setting a price on the labor, cartage and incidentals. After this work has been carefully done, very few business men will omit to add a profit.

In a paper on prepayment gas meters recently read by Mr. Nasmyth before the Manchester Engineers' Association, the author states that the adoption of these meters in England has more than made up for the diminished gas consumption of those who have adopted the electric light. In Liverpool 12,000 of these prepayment meters are now in use. In London each meter is the means of selling from 10,000 feet to 20,000 feet of gas every year; and in Croydon, by their means, the consumption of gas has increased 16,000,000 feet in a single year.

The marked decrease in immigration into the United States last year is illustrated by the report of the landing agent at Ellis Island, New York, which shows that during the year 1894 188,164 steerage and 92,561 cabin passengers were landed at this port, the smallest number since 1878. The following table shows the total arrival of immigrants in the past ten years:

1885.....	305,346
1886.....	334,203
1887.....	490,109
1888.....	546,889
1889.....	444,427
1890.....	455,202
1891.....	500,310
1892.....	628,084
1893.....	502,917
1894.....	188,164

THE LETTER BOX.

Squaring the Circle.

From J. L. S., *Catasauqua, Pa.*—I send you herewith an account of how the circle is squared by M. Roche, Ph.D., of the Polytechnic Nautical and Mechanical College of Philadelphia. Given any circle to construct a square that shall be in area equal to it. Let a horizontal line be drawn tangent to the circle. Revolve the circle on its circumference until the original point of tangency touches the line again. Then will the distance between the two points be exactly equal to the circumference of the circle. Bisect this distance and draw a perpendicular equal to the radius of the circle and complete the rectangle, which will be exactly equal to the area of the circle, for it will be one-half of the circumference multiplied by one-half of the diameter. The description and the diagram, which is copyrighted, further shows how to change this rectangle into a square.

Note.—We are very glad to print this interesting communication showing that a mechanical method has been devised for approximating the area of a circle. We cannot, however, consider this a method of squaring the circle. Our correspondent, of course, is aware that a man might take a tape measure and measure the circumference of a circle and multiply it by one-quarter of its diameter and the result would be the area. The point is to solve it mathematically. We might say that to find the area of a circle it would only be necessary to cut a sheet of lead to its exact size, then remold it into a square, and measure the square. Or, take a lot of shot and squeeze them from the form of a circle into that of a rectangle. All of these methods are more or less approximate, but they do not come within the definition of squaring the circle. Our correspondent will readily perceive that with the relationship between the diameter and circumference known to over one hundred decimal places, there will be less error in calculating the area according to the old fashioned rule than there would be in applying a mechanical method such as here described.

From A. T. N.—I notice in *The Metal Worker* of January 19 that a reader wishes a method for squaring the circle. I have a book wherein Rufus Fuller, 255 Tremont street, Boston, Mass., claims to have discovered the exact relation between the diameter and circumference of the circle, which he says is as 1 is to $3\frac{2}{3}\frac{1}{2}$; In other words, when the diameter of a circle is 1 inch the circumference is $3\frac{2}{3}\frac{1}{2}$ inches.

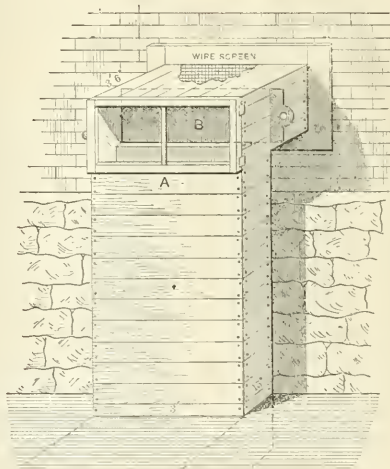
Note.—This is an interesting statement that our correspondent furnishes, but unfortunately the fraction he gives does not agree with the approximate

numbers that have been previously determined. The relation between the diameter and circumference is expressed by an indeterminate decimal which has been carried out, as we have stated, to over one hundred decimal places, beginning in this way 3.141592653589. If our correspondent will compare this with the fraction that he has quoted he will find that after the fifth decimal place the two do not agree, so we fear the fraction is not correct. The commonest fraction is $\frac{22}{7}$. This agrees for two decimal places and is near enough for many practical purposes.

Since the above was written we have received a letter from E. M. Lang &

The Metal Worker. The duct is made of matched flooring boards, with a sash hinged at the top in the same manner as a transom, as shown by A of the sketch. If under the influence of some winds the hot air is inclined to be discharged out of the cold air duct, the sash door at A can be opened and the slide shown at B kept shut, preventing the escape of hot air and providing for a cold air supply to be taken from the cellar until the wind changes. I would like some of the readers of *The Metal Worker* to suggest a plan for an air filter for such a duct; also give the name and address of some manufacturer of such an apparatus.

Note.—We should be glad to have our readers contribute anything that they have tested for filtering air. In



A Cold Air Duct.

Co., Portland, Me., referring likewise to the book of Rufus Fuller and giving his rules as they appear. The first is the same as the one above quoted, while the second one reads as follows: "Multiply the given diameter of the circle by 148, divide the product by 167, and the quotient is the length of one side of the square that contains the same area as the circle." This, however, is simply another way of putting the former statement, and consequently contains the same error.

A Cold Air Duct.

From J. L., *Pittsburgh, Pa.*—I send you a sketch of a combination cold air duct and light shaft, which can be connected with the same window and supply a furnace with air and the cellar with light. I trust it may be of some value to the readers of

The Metal Worker of October 28, 1893, such an apparatus was described, the Farquhar Heating Company, 61 Dearborn street, Chicago, Ill., making an apparatus for this purpose.

Heating from Stove Coil.

From W. F. S., *Bayfield, Wis.*—The hot water heating plant which I placed in a barber shop according to instructions given in *The Metal Worker* December 1 is giving such satisfaction with the weather 10° and 15° below zero that it encourages me to ask some more questions on that system of heating. I am thinking of heating, or assisting my coal stove to heat, my dining room from a coil in the water front of my cooking stove or range, which is a No. 8. I am making my water front out of $\frac{1}{2}$ inch gas pipe and return bends. I cannot use larger pipe as it would take up too much space in the fire box. There will be four pieces of pipe 20

inches long exposed to the fire. I will connect the water front to a 30 gallon boiler and run flow pipe from top of the boiler to a coil of 1 inch pipe in the dining room. What I wish to know is, what size should I use for flow and return pipe from the boiler to the radiator; would it be practicable to use pipe larger than 4-inch when my water front is only 4-inch pipe? The distance from the boiler to the radiator is 10 feet, but three turns will have to be made in the return from the radiator, and it will have to run under the floor owing to a door. In making the return I will connect with the water back with a Y-fitting.

Answer.—The pipe coil which our correspondent intends to place in the stove will present a surface of about 2½ square feet. This character of surface will in all probability take care of 25 square feet of surface in the radiator for each foot of surface in the coil, or about 60 square feet in all. A 4-inch pipe would give very fair service as a flow and return to a radiator of this size. There is no reason, however, why the flow and return pipe should not be larger, and as the radiating coil is to be 1-inch pipe, the flow mains may be made of the same size without disadvantage. The turns that will be made in the return pipe and the distance which it has to rise to connect with the water back, and the fact that the radiator is on the floor, will all hinder a lively circulation, but if the job is piped with a fall in the main from where it leaves the boiler to the radiator, and a fall in the return pipe all the way from the radiator to a point where it rises and connects with the pipe coil in the stove without air traps or low places, our correspondent may be successful in making the job work.

Purifying Cistern Water.

From M. A. X., Cane Creek, Tenn.—Please inform me, through the columns of *The Metal Worker*, what you know about a contrivance or invention by which cistern water can be cleansed without drawing the water off. A customer called to day and stated that such a thing was in existence.

Note.—We do not know to what device our correspondent refers, and if any of our readers know of such a thing we shall be glad to have them write us for this correspondent's benefit. It is not impossible that the scheme is to purify the water by carrying air down into it. This has been done on a large scale in water works reservoir with good results. The oxygen of the air destroys the impurities in a large measure and under certain conditions we presume this method could be followed for purifying cistern water.

How to Make Gold Plentiful.

From CORNICEMAN, Chicago.—I am much interested in the currency discussion now going on in the columns of our daily papers, but much of it seems to me to be devoid of common sense. I believe the whole question would be solved by a very simple enactment that on and after a certain date, a reasonable

time hence, all debts exceeding say \$25 should be payable one-half in gold at the option of the creditor. There would then be such a demand for gold that it would be, for a time at least, more profitable to import than to export it, and after gold again became abundant occasional exports would not excite a ripple of comment.

Pressure and Circulation.

From J. H., Springfield, Mass.—I submit two sketches of hot water heating plants about which I would like some information. If the hot water plant shown in Fig. 1 was filled with cold water to the dotted line in the expansion tank and the safety on the overflow set to open at 1 pound and the altitude gauge at the bottom of the boiler registered 21 pounds, what would the altitude gauge register if the lever on the safety valve was weighted so that no water would waste until 26 pounds pressure was developed at that point, and the plant was heated up and the safety valve wasting? Will a plant work piped as shown in Fig. 2 with the first radiator having both the flow and return connected to the flow main and the radiator above being connected with the flow main and its return connecting with the pipe to the expansion tank—will the first radiator get hot water? I have seen a plant piped in this way.

Answer.—In reply to the first query the pressure that will be shown on the altitude gauge will be the natural pressure due to the height of the water col

cure a much better circulation than the lower radiator, and it is probable that if the return from the lower radiator was connected with the return from the

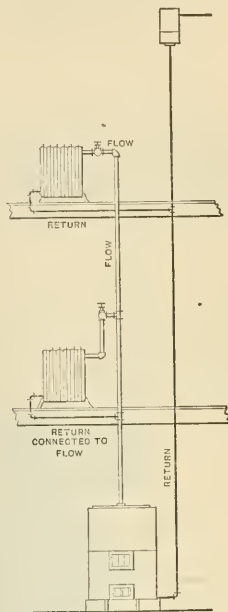


Fig. 2.—A Questionable Connection.

expansion tank better results would be secured. Further discussion on these inquiries is invited.

Insurance Rates on Gasoline Stoves.

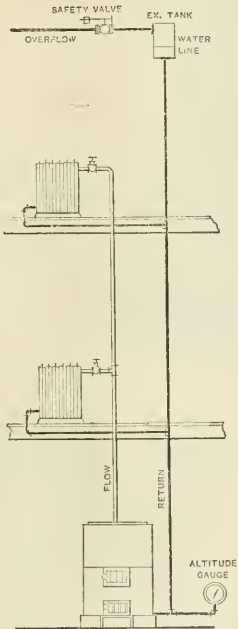
From C. P. A., Port Ewen, N. Y.—I would like to ask the following question through the columns of *The Metal Worker*, as it may be of interest to some of my fellow workmen. Some time ago I purchased a gasoline soldering furnace for the shop and now my insurance agent says I must pay \$2.50 extra if I burn it. I am already paying \$18.75 per \$1000 for one year and I think it is an outrage to ask for any more. If any of my fellow workmen have had any such experience I would like to know how they came out.

Question of Gas Pressure.

From G. E. S., Pennsylvania.—I am interested in a gas plant in this place. Our pipe line crosses a bridge, and at some periods of the winter we are annoyed by the reduction of the pressure during the cold weather. I think it is caused by hoar frost. The pipe is 6 inches in diameter. I would like to have an opinion from your readers who have had similar experience, and would ask them to give their views as to the best means of preventing the trouble.

Furnace Pipe Rule.

From H. T. G.—I would be very glad if some of the practical readers of *The Metal Worker* would tell me a rule for obtaining the size of pipe and register necessary to admit a certain quantity of air per hour into a room, the temperature of the air to be delivered being known.



Pressure and Circulation.—Fig. 1.—A Question of Pressure.

umn plus the 26 pounds pressure secured through weighting the safety valve, or a register of 47 pounds on the altitude gauge. In reference to the second query, the radiator that is placed highest on the system will undoubtedly se-

STEAM AND HOT WATER.

The Tabasco Water Heater.

The accompanying illustrations show a general and sectional view of the Tabasco water heater manufactured by the Kewanee Boiler Company, Kewanee, Ill., with Chicago office at 96 Lake street. Fig. 1 is a general view of the

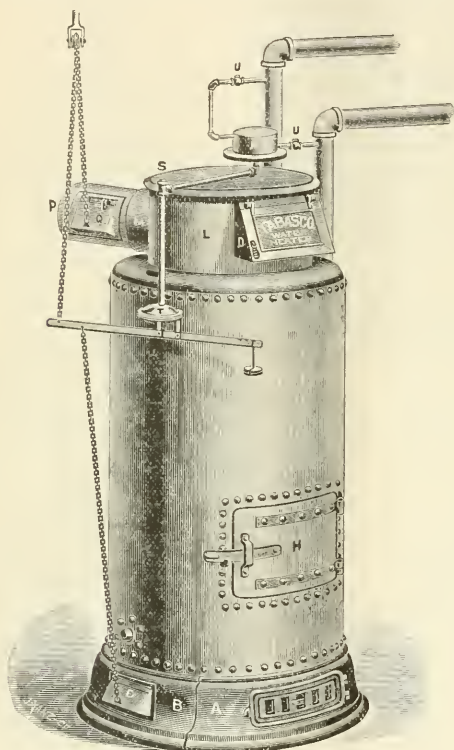
tention is directed by the manufacturers to the automatic temperature regulator shown attached in Fig. 1. The regulator pot R is a double shell, the intervening space being filled with water, and this water chamber is connected to the flow and return pipes at the most convenient points, so that the

Heating and Drying by the Use of Exhaust Steam and Live Steam Reduced to Low Pressure, Either Separately or in Combination.*

BY ALFRED A. HUNTINO, BOSTON, MASS.

Heating and Drying by the use of steam in a primitive way dates back to the time of its being first successfully used for power. Boulton showed by actual use that exhaust steam could be carried long distances in pipes and that a high temperature could be developed in drying rooms by its use.

Steam for heating has been a favorite study with many engineers, and such use has been highly developed in certain lines, especially in high pressure work, while less attention has been paid to the utilization of exhaust steam and heating at low pressure on a large scale. Heating by exhaust steam has been a bone of contention, many arguing that



The Tabasco Water Heater.—Fig. 1.—General View.

boiler, showing its appearance and the automatic temperature regulator, while Fig. 2 is a sectional view illustrating the water spaces, the magazine feed, &c. This heater is especially adapted for heating water for bathrooms, laundries, hotels, flats, baptistries, &c., special claim being made for its simplicity, ease of management and safety. The heater is made of two plates, with one steel head and inside loose fuel magazine, which is easily dropped into place and removed when necessary. The grate can also be taken out without breaking the connections of the heater, and the whole apparatus, it is pointed out, can be put together as easily as a stove. The water ways, it is mentioned, are all vertical, there being no cross currents. All the fire surfaces likewise are vertical and directly over the fire. The boilers are all tested to 110 pounds water pressure before leaving the works. Special at-

tention is directed by the manufacturers to the automatic temperature regulator shown attached in Fig. 1. The inner shell is filled with air, and connected to the diaphragm T, the upper part of the diaphragm being filled with water at the plug S. The variation in the temperature of the water in the heater varies the volume of air, which, acting on the copper diaphragm, opens and closes the draft door D and the check draft Q. A proper adjustment of the weights on the diaphragm lever will, it is stated, regulate the temperature of water, within a very few degrees, and the rooms to be heated can be kept at any desired temperature without other attention than occasionally filling the magazine with coal.

A. C. EDGAR of the Model Heating Company, Philadelphia, and Percival H. Seward of the American Boiler Company, New York, were visitors at The Metal Worker office recently.

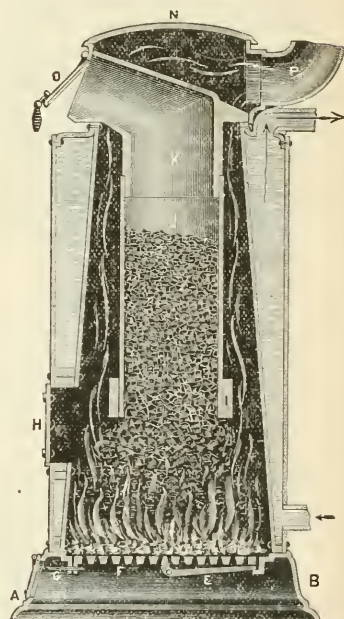


Fig. 2.—Sectional View of Heater.

it was absolute waste to attempt it, that it was much more economical to allow the exhaust to go to waste, and that it was better to have a free exhaust and to do the heating by live steam. The plan of piping to use exhaust steam for heating and drying, as generally designed, causes a back pressure at the engine. This is especially true of the early work in this direction, where 10 to 15 pounds back pressure was used to force the

* Presented at the New York meeting of the American Society of Heating and Ventilating Engineers, January 23-25, 1895.

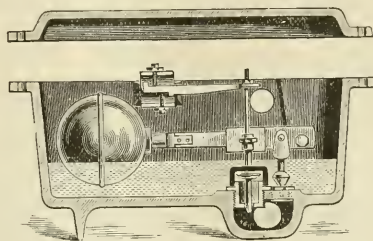
steam through a system. Even to day it is not unusual to find similar conditions. Lately plans have been put up to work with only 2 or 3 pounds of back pressure. It is wasteful to heat with exhaust or live steam above atmospheric pressure under ordinary circumstances, even where the plants are of the largest description. It needs no argument to prove that back pressure at an engine is a loss in the ratio of back pressure to mean effective pressure, especially when better results can be obtained by the use of exhaust steam, all back pressure being removed from the engine and the engine actually working under a vacuum, which can be shown by indicator cards and by gauges.

Steam heating plants vary in conditions, no two plants being just the same. There is no cast iron rule to be laid down by which they should be designed or by which they should be operated. Where engines and pumps are used, the steam which passes through them gives up a certain amount of heat units in power, still retaining, however, more of the said units than is generally sufficient for heating, drying, or for kindred purposes, even after passing through a feed water heater, and heating the water to a point near boiling. It has been satisfactorily shown in practice that steam at a pressure at or below the atmosphere heats the system more uniformly; that products of manufacturing processes are increased and at the same time; that a large saving in fuel and other economies is effected. Given a building of certain dimensions which is to be used for a purpose requiring steam for power, heat, and other purposes wherein the cost of steam for power is the same as the cost of steam for heating and other purposes, the two costing, say, \$10 per day. Now, use the exhaust steam for heating and other purposes, and your bill for steam is cut in two, making it \$5 per day. The saving will be greater or smaller according to the size of the plant and the amount of exhaust steam utilized. In cases where the uses to which exhaust steam can be applied are greater than the production, then live steam at a pressure corresponding to the exhaust steam, *i. e.*, atmospheric pressure, can be fed into the system to make up the deficiency, the two working in perfect combination and causing no back pressure.

In many cases where exhaust steam and live steam are fed into a heating system, usually run under pressure, the exhaust steam goes to waste, the live steam doing heating, by which practice the cost of heating is doubled instead of being lessened, as was the intention. There are many cases where small engines and pumps exhaust into one main exhaust pipe, the terminal pressure of no two of them being alike. Under these conditions (where a system is properly designed) the steam may be perfectly utilized for heating and drying without causing a back pressure on any one of the combination of exhausts. In a well devised system the water of condensation should all be returned to the boiler. There will, of course, be a small loss, but by the use of care the water bill may be reduced to a small item. In plants where the engines and pumps are stopped at night, the heating can be done by steam at reduced pressure from the boiler direct. This keeps the building perfectly heated, both by day and by night, which is a more economical practice than to allow it to cool off during the night to be heated again in the morning.

In the ordinary steam system run at

moderate pressure, bubbles of air form on the interior of the pipes, radiators or dryers. After a time, if there are impurities in the water, the pipes and radiators are covered with scale, which covers the bubbles as well as the rest of the interior of the heating or drying surface until the whole interior is coated with a first-class insulating material, the heating surface losing in efficiency as such coating increases. Such an interior coating also retards the flow of condensed water. Water in pipes acts as a condenser and abstracts heat that should be given out through the heating surface. When it is attempted to remove air and water in the ordinary way (that is by pressure), a large per cent. of the heating surface remains inoperative, because such air and water are not properly or efficiently removed. Results count. The best system gives the best results. In a large office building in Boston, where it was supposed that everything had been done in a manner conducive to best economy in coal consumption and the general operation of the whole heating plant, a saving was made over the previous year, in four months' time, of over \$1000. How was this done?



The Onderdonk Combination Steam Trap.—Sectional View.

Simply by the removal of air from the heating system, relieving the engines and pumps from all back pressure, and by discontinuing the use of live steam. The manner of piping and method of working in this case gives the results. It is equally effective whether exhaust or live steam at or below the atmosphere is used, or where steam at pressure is found to be necessary.

The Onderdonk Combination Steam Trap.

In the illustration presented herewith we show the Onderdonk combination steam trap manufactured by the Onderdonk Heating & Ventilating Company, 520 Commerce street, Philadelphia, Pa. This trap is designed to overcome flooding, and at the same time to prevent the escape of steam, both the inlet and outlet being large. The outlet is controlled by a valve, which is connected to a lever arm by an expansion spring. When only water is returned to the trap this outlet remains wide open and allows the water to discharge from the trap as fast as it enters. As soon as the steam enters the trap the springs are expanded and this outlet closes, and the condensation is then controlled by the float and is discharged through a much smaller aperture. The fact that the water is discharged through the larger port as soon as it becomes cooled prevents the possibility of the trap becoming frozen. The trap can be used to bleed high pressure mains, and it is not necessary to provide a by-pass around it, the ex-

panding port serving the purpose. In operation it is claimed that the trap will return a very large amount of condensation, and will also serve as an air vent for a heating system. The trap is made in five sizes to control from 1400 to 12,000 square feet of pipe or heating surface.

The Literature of Heating and Ventilating.

At the New York meeting of the American Society of Heating and Ventilating Engineers, held January 22 to 25, an interesting paper on the literature of heating and ventilation was presented by Hugh J. Barron of New York, from which we quote as follows:

I think it advisable at this place to insert a list of all the literature on this subject that I have been able to secure the use of. I have divided this list into three parts, the first consisting of books, the second part of essays, and the third of catalogues. I have excluded everything that does not pertain to the arts of heating and ventilating

as a special field of effort, and I have been particular to avoid the scientific aspects of the subject of heat and of steam engineering. I have, as far as possible, given the dates when the works were published. There will, of course, be some errors, due to different editions of the same work and other causes. These lists, I am satisfied, do not contain half the works that have been published; many are lost; more are inaccessible.

In the development of the arts no work of man is to be despised; even the most rubbishy is interesting as a milestone on the march of human progress. Philosophers now generally realize that the histories of nations are in their arts and their literatures. The true history of this special art is in its literature, and when that is carefully examined it will be found that its development has been due to the thousands of unknown workers that have been engaged in it, and that any one man's share in the advancement has been very small indeed.

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Conducting of Air by Forced Ventilation. Marquis de Chabannes. London, 1818.

The Principles of Warming and Ventilating Public Buildings, Dwelling Houses, &c. Thos. Tredgold, C.E. London, 1824.

Warming, Ventilation, and Sound. W. S. Inman. London, 1836.

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tilating by Thos. Tredgold, with an appendix. T. Bramah, C.E. London, 1836.

Heating by the Perkins System. C. J. Richardson. London, 1840.

Illustrations of the Theory and Practice of Ventilation, with Remarks on Warming. David Boswell Reid, M.D. London, 1844.

A Practical Treatise on Warming by Hot Water. Chas. Hood, F.R.S. London, 1844.

History and Art of Warming and Ventilating. Walter Bernan, C.E. London, 1845.

Warming and Ventilation. Charles Tomlinson. London, 1844.

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Practical Treatise on Ventilation. Morrill Wyman. Boston, 1846.

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Practical Method of Ventilating Buildings, with an appendix on Heating by Steam and Water. Dr. Luther V. Bell. Boston, 1848.

Warming and Ventilation. Chas. Tomlinson. London, 1850.

Practical Ventilation. Robert Scott Burns. Edinburgh, 1850.

Ventilation and Warming. Henry Ruttan. New York, 1862.

A Treatise on Ventilation. Robert Ritchie. London, 1862.

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A Treatise on Ventilation. Lewis W. Leeds. Philadelphia, 1868; New York, 1871.

Observations on the Construction of Healthy Dwellings. Capt. Douglas Galton. Oxford, 1875.

Practical Ventilating and Warming. Jos. Constantine. London, 1875.

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The Principles of Ventilation and Heating. John S. Billings, M.D. New York, 1884.

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Metal Worker Essays on House Heating. New York, 1890.

Heat—Its Application to the Warming and Ventilation of Buildings. John H. Mills. Boston, 1890.

Ventilation and Heating. T. Edwards. London, 1890.

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A FIRE having destroyed the plant of the Pottsville Steam Heat and Power Company. Pottsville, Pa., numerous

dwellings and hotels that secured steam from them for heating purposes are now in an unhappy condition. Local heating men should be able to allay the discomfort by the prompt installation of a portable house heating boiler.

Heating and Ventilation of School Buildings.*

BY T. J. WATERS, CHICAGO, ILL.

The subject of heating and ventilation of school buildings is one which has been ably discussed from various standpoints by eminent heating and ventilating engineers for a number of years, and in view of this fact it is with a great deal of diffidence that I make the effort to address myself to the subject. It may safely be stated without fear of contradiction that a system of steam heating and mechanical ventilation, properly arranged and proportioned, is the one recognized as being superior to all others by the most advanced heating and ventilating engineers of the present time. A brief history, therefore, of the introduction of the first steam heating and mechanical ventilating apparatus in a Chicago public school may not be out of place, but rather of interest to the members of the American Society of Heating and Ventilating Engineers.

The building referred to is the Dore school, located on Harrison street, near Halsted street. The structure is brick, four stories high, and contains 16 class rooms, one office and two recitation rooms. It was erected in 1867, but the system of heating and ventilation was not finally determined upon until the building was nearly completed. The original intention was to heat by furnaces, but owing to the indefatigable efforts of W. J. Twobig, now with the Crane Company, but at that time of the firm of Walworth, Twobig & Furse, then leading steam heating contractors in the West, the Board of Education decided to take a step in advance of the times, and accepted the proposition of said firm, which provided for a system of indirect steam heating and mechanical ventilating apparatus, designed and installed under the direction and supervision of John Woodman, their superintendent. The apparatus consisted of two horizontal tubular boilers 42 inches by 12 feet; with 34 3 inch tubes each; four return bend coils of 1-inch pipe, each 22 feet long, 14 pipes high by 12 pipes wide. These coils were located in the basement corridor and inclosed in brick work. Each coil was connected with four rooms by means of two tin ducts which extended up in wardrobes and terminated in each room 12 inches above the floor, about 20 feet apart, with a deflecting hood arranged so that the current of air was directed downward. These hoods were also used to control the volume of air, as no switch damper was provided to regulate the temperature thereof. The corridors were also heated from these coils, there being four registers on the first floor. There were four 18-inch steam traps, "pot" pattern, one for each coil, which discharged the water of condensation into a receiving tank, and from thence it was pumped into the boilers. The blower, 72 inches in diameter, was inclosed in a brick housing and was operated by a 9 x 14 inch engine. The blower was manufactured by Morris & Tasker Company of Philadelphia, and is still in use. For a period of seven

years the heating apparatus gave fairly good results, when it was found necessary to remove the old coils, owing to the great number of leaks occasioned by rust in the form of pin holes. The coils would have lasted much longer, no doubt, had they been placed in a perfectly dry basement or kept in constant use.

The present apparatus in this building was designed by the writer, and consists of wrought iron staggered pipe radiators, one being placed at the base of each duct. In addition to these radiators, wall coils were placed in class rooms around the exposed walls under windows. The old boilers proved to be inadequate, and a few years after the coils were removed new boilers were substituted. A number of school buildings were heated in the manner just described three years prior to the removal of the old apparatus, and, in fact, all the school buildings heated by steam up to 1889 were heated practically in the same way. Since the installation of the first apparatus various improvements have been made, principally in the manner of introducing air, and also in the placing of switch dampers in blast ducts, thus enabling the teacher to regulate the temperature of the air without decreasing its volume. We have several buildings in which disk fans are used, one being a blast fan to distribute air through galvanized iron ducts suspended from the ceiling to the various indirect cast iron radiators, and from thence to class rooms by means of vertical ducts. The exit ducts from class rooms in these buildings are usually concentrated in a room in the basement, where an exhaust fan is placed to draw the air from the various rooms and expel it from the building. About three years ago the writer discontinued the use of the latter fan for all new work. After a series of careful experiments and observations in old buildings formerly heated by furnaces and subsequently equipped with steam heating and mechanical ventilating apparatus, blowers being used, it was found that satisfactory ventilation was obtained by the use of the old exit ducts which led from each class room directly through the roof. There can be no doubt but what a more positive movement of air may be obtained by the employment of an exhaust fan, but the objection to its use, however, aside from the additional cost lies in the fact that it has a tendency to create a partial vacuum in a room, thus allowing the cold air to rush in through openings around the windows. The warm air entering the room through the blast duct is also liable to be drawn too rapidly to the point of exit, thus subjecting the occupants to disagreeable drafts.

The question of drafts has been a source of annoyance to the writer for a number of years, more especially in buildings where mechanical ventilation is employed. Five years ago I determined to experiment on a new line in an old building which was being remodeled. The building is brick, three stories high, and contains 12 class rooms, an office and two recitation rooms. It was formerly heated by wall coils and a system of direct-indirect staggered pipe radiators, two radiators in each room, valued so that either one or both might be used. The radiators referred to were 4 pipes wide by 28 long by 34 inches high. It occurred to the writer that by placing one-third of the total amount of surface, eight radiators, between the outside air and the inlet to the blower, 72 x 42 inches, the air, after passing through these radia-

tors, would be about 70°, consequently it may be readily seen that a change from the maximum, about 120°, to the standard minimum of 70° would be a decided improvement on the old method of using the air for tempering purposes at the temperature of the outside atmosphere. The balance of the radiators, 16, were placed on a suitable platform of wood in front of the blower outlet, arranged in three sections, 2 radiators wide by 2 high, and each section controlled by valves, so that any one or all might be used, as occasion required. The wall coils were allowed to remain, but are not used except in extremely cold weather, and then only in the morning until the building is properly heated. The blower is operated by an 8 x 12 inch horizontal slide valve engine. The exhaust steam is utilized in the heating apparatus, and cross connected in such a manner that it may be turned into radiators in the cold air chamber and also in the warm air distributing chamber, or to the 3-inch wrought iron vapor pipe from a cast iron catch basin, which extends up through the brick smoke stack to a point 3 feet above it. A pressure regulator is used on the heating main, and a pressure of from 1 to 5 pounds per square inch on the system is sufficient in the coldest weather to maintain a circulation in the radiators. The water of condensation is returned to a sealed tank made to withstand a pressure of 100 pounds per square inch. A water regulator is attached to the tank and connected with the city main to maintain a uniform water line. A duplex steam pump, 5½ x 3½ x 5 inches, is used to force the water of condensation from the tank into the boilers. The steam heating apparatus proper is known to the trade as Waters' semi-gravity system, and was introduced to supplant steam traps seven years ago.

Since the introduction of the above system a saving of from 15 to 20 per cent. in fuel has been accomplished in some buildings from which the steam traps were removed.

The platforms in the cold air chamber, and also in the warm air distributing chamber, stand about 3 feet 6 inches above the basement floor, the space beneath the platform being used as a chamber for the tempered air. The entire chamber is inclosed in brick work, and a galvanized iron duct, 18 x 20 inches, leads therefrom on the basement ceiling, which connects with a vertical duct to each class room. These ducts have openings near the ceiling inside of the warm air chamber, in which a switch damper is located to regulate the temperature of the air passing through them. The ends of the ducts terminate at the bottom of the platform, full size, to receive the air at the minimum temperature. The dampers are operated automatically by the Johnson electric system of heat regulation. A damper is also placed in each duct to regulate the volume of air. It will thus be seen that when one of the switch dampers is closed against the air at the maximum temperature its volume through the duct is not diminished, and also the amount thus shut off from the top of the platform is exerted on all ducts open to its influence. The results obtained from this arrangement were so satisfactory that all new school buildings erected in the city of Chicago since 1889 have been provided with a heating and ventilating apparatus of this character. It is true that several minor changes have been made from time to time with a view to reach a higher

* Presented at the New York meeting of the American Society of Heating and Ventilating Engineers, January 22-25, 1895.

standard of perfection, but the essential features, as above described, still prevail. The style of radiator adopted for this work is 1-inch staggered pipe 4 pipe wide, 32 pipe long, by 6 feet high.

In designing an apparatus of this kind, care should be exercised in the location of blast and exit ducts. My practice for several years has been to introduce the incoming air toward the ceiling at a point about 7 feet from the floor line and to locate the exit ducts, whenever practicable, on the same side of the room as the former ducts. The size of each of these ducts will average 18 x 20 inches, or a cross sectional area of 2.5 square feet.

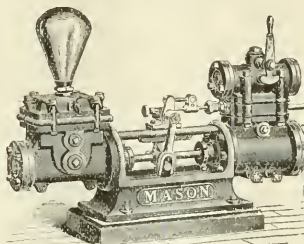
It is obvious that an amount of air sufficient to properly ventilate an ordinary class room, 25 x 33 x 14 feet, containing 60 pupils, must pass through a duct of the size given above at a velocity of 12 feet per second, or 720 feet per minute to furnish the required amount *per capita*.

Notwithstanding the fact that the minimum temperature of the air has been raised to a standard of 70°, drafts are in some instances perceptible to a disagreeable extent if the switch damper is closed against the air of maximum temperature when it is introduced at such a high velocity. Various devices have been introduced by the writer in the shape of deflectors, placed in front of the outlet of blast ducts in rooms to break up the current of air, but nothing approaching satisfactory results was obtained until quite recently. The latest device consists of a galvanized iron hood placed in front of the blast duct, which extends on both sides of the same, and presents a cross sectional area of 6 square feet. The current of air entering this hood is broken up placing two diaphragms, one on each side of the center of the duct, with a slight curve to each end of the hood. An open space of 6 inches is also left between the diaphragms, thus dividing the inflow of air into three equal parts and compelling it to pass in as many different directions from the hood, at an angle of 45° toward the ceiling. This device has been in operation since September 1 of the past year, and thus far I have not heard a complaint about drafts. The above arrangement reduces the velocity of the air through the same size duct at its terminus about 58 per cent., which fact is worthy of consideration by any person interested in this class of work. It is quite natural to suppose that a galvanized iron hood of such dimensions would look unsightly, but if properly made and painted a color to harmonize with the wall, it certainly ought not to be considered objectionable by the most fastidious. It has been found from actual experience and observations that 30 cubic feet of air per minute, or 1800 cubic feet per hour, *per capita*, is necessary in order to secure satisfactory results. The above fact was clearly demonstrated a few years ago in a class room which had a seating capacity of 60 pupils. Owing to the crowded condition of the building, however, 10 additional pupils were placed in this room. After school was in session about one hour it was found necessary to open some of the windows owing to the vitiated condition of the air. A short time after an additional room was fitted up to relieve the overcrowded one, and as soon as the extra pupils were removed there was no further difficulty experienced.

For some years past the tendency has been to decrease the number of sittings

from 60 to 54. It is good practice, however, to provide a blower which will readily furnish the maximum amount of air required without forcing it to its full capacity, especially if it is placed within the building and under a class room. Engines or blowers operated at high velocities will transmit vibrations to walls and floor joists, which are objectionable. If brick walls are used around blowers, care should be taken not to have them touch the ceiling for the reason just stated. A space of 4 inches may be left between the ceiling and wall which can be filled in by means of a rubber belt or mineral wool, which will reduce the effect of vibrations to the minimum.

The boys' and girls' closet rooms erected during the past six years are isolated from the main buildings, but are reached by connecting passages from the basement rooms. Said closet rooms are heated by ceiling coils only, no indirect heat being used. The ventilation of these rooms is accomplished by a 36-inch disk fan and combination engine. The fan is located in an inclosed chamber at some central point between the closet rooms. A galva-



The Mason Receiver.

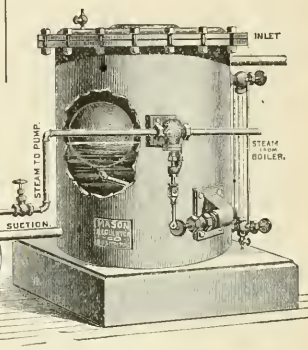
nized iron duct of suitable size is extended from a point near floor line in each room to a fan chamber, and from thence the air is expelled outside of building. Until three years ago it was the practice to heat the said rooms by direct and indirect radiation, but the latter was abandoned because it was found impossible to keep the doors closed leading to the basement rooms. As a result the slight pressure occasioned by the blast from the indirect chamber caused an outflow of air from the closet rooms when the doors were opened, which invariably found its way to the corridors and ultimately to the class rooms. If closet room doors remain open now, the air moves in the right direction, or just the reverse of its former course whenever the fan is in operation.

During the present year I decided not to specify wall coils for class rooms of new buildings. The only direct heat now being used is in the shape of radiators located in the first and second story corridors. Doors are provided in the cold air chambers, so that air may be taken directly from the building in the morning up to about one-half hour before sessions begin. The exit ducts from the rooms are brought together in the attic and connected to a circular duct which extends through roof, properly capped. In some of the large buildings there are two ducts, as described. A damper is placed in the said ducts in such a manner that they may be operated by the engineer by means of a cable which extends to the basement. These dampers are kept closed in the morning, thus avoiding

the introduction of cold air through exit ducts. When air is introduced from outside of the building the dampers in the exit ducts are then opened. A building can be heated in this manner at least one hour earlier than it is possible to heat it by taking air directly from outside, which means a considerable saving in coal.

We have about 300 school buildings, including rented buildings to relieve overcrowded districts, in which are used nearly every conceivable style of heating and ventilating apparatus. There are 150 buildings heated by steam, and 75 of these are equipped with a heating and ventilating apparatus similar to that introduced five years ago and which has been fully described above.

It may be of interest to know the cost of a steam heating and mechanical ventilating apparatus since new methods have been adopted, as compared with



the old style of five years ago, for a building containing 17 class rooms, 1 office and 2 recitation rooms.

	1880.	1894.
Steam heating.....	\$7,595	\$3,883
Mechanical ventilating.....	6,106	3,400

Which shows a saving in cost for both apparatus of about 46 per cent. in favor of the present system.

The Mason Receiver.

The Mason Regulator Company of Boston, Mass., have put on the market in connection with their steam pump a receiver for draining the condensation from radiators, drying cylinders, steam coils and, in fact, any system of steam heating. This receiver takes these returns and automatically delivers them to the Mason boiler feed pump. It will be noticed by referring to the cut that the condensation enters the receiver at the point marked "inlet" and fills the vessel until it carries the ball float up to a certain level, when the float in rising opens the balanced valve which is shown on the outside of the receiver and which admits the steam to the pump. The pump immediately starts and draws the accumulated condensation through the suction pipe, forcing it back into the boiler. The greater the quantity of water in the receiver, the faster will the pump move, and as the water level diminishes in the receiver the pump slows down. Instead of the ordinary copper float, an electro deposited float is used. Although the pump is single acting, it is impossible for it to stop on the center.

After the Convention.

THE presidential address of E. P. Bates at the opening of the Convention of the American Society of Heating and Ventilating Engineers can be read frequently by members and those desiring to become members with advantage, if its suggestions are followed. It is lofty in sentiment and the society will operate on a high plane if it is kept in mind by the members.

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In reading our report we find that the word "fan" has been substituted for "coil" in the remarks made by Stewart A. Jellett on the use of heating coils behind the fan so that the fan drew its air supply through the coils.

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THE opinions of the convention that have been expressed since its adjournment are unanimous in agreement that the society has made an excellent start and has been of value to all who were fortunate enough to be able to arrange their business to be present.

**

SOME of the less technical members hope to have their practice explained from a theoretical standpoint, so that practice and theory may not herd by themselves in the society.

**

THE society can do a great good to the public by treating furnace heating scientifically and in detail, so that its evils may be eradicated, as furnace heating is established to stay and is popular with an immense proportion of the public. Anything that is so generally used is worthy of attention.

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In the comparison of methods followed in heating the high buildings now common, some of the members did not agree, and in the discussion that ensued much food for reflection was furnished.

HEATING NOTES.

PRESIDENT JOSEPH BOND of the American Radiator Company, Chicago, sails for Europe on the 15th of February to arrange for the company's London office, of which Henry S. Downe will be manager. The present address of the company in London is care of the Union Bank.

IT IS STATED that the radiator factory at Elwood, Ind., has passed into the hands of a company of local capitalists with a paid up capital stock of \$50,000, to be increased shortly to double that sum. The officers of the new company are: President, T. L. DeHority; secretary and treasurer, F. M. Headley; directors, A. J. Hobbs, J. B. Hobbs, F. M. Headley, T. L. DeHority and John Halloran.

IN NEW OFFICES at 141 Centre street, New York, Thomas W. Weather's Sons have a welcome for the hot water heating tradesman or those interested in greenhouse construction. On entering the outer office the drafting room is at one side and the general office at the other. From the general office entrance is gained to the private office and the wareroom. These offices are heated by steam, which presents the exhibition

of their hot water boiler on the office floor heating radiators at desirable points, which was the method of heating employed in their former offices.

THE FOSTER ENGINEERING COMPANY, Newark, N. J., have just entered an order for two valves, 18-inch and 14-inch in size, intended for the Anheuser-Busch Brewing Association of St. Louis. These pressure regulators are of the Foster New "Class W" style, and when completed will be the largest reducing valves ever turned out of their works.

ROHN & ELLICOTT, Easton, Pa., are distributing circulars directing attention to the Easton boiler for steam or hot water. The fire box of this boiler is a hollow cast iron water reservoir, and the boiler proper is made of horizontal tubes presenting a very extensive surface to the heat. The circular gives table of prices and sizes and prints a number of references and testimonials.

PRESIDENT W. K. PIERCE of the American Boiler Company, Chicago, was a visitor at the New York house this week. The company have a varied line of steam and hot water heaters which they keep before the trade with satisfactory results.

GEORGE B. COBB & Co., 96 Centre street, New York, are enlarging their office and showrooms to facilitate the transaction of their business in steam and hot water heating. They are also showing some novelties in the gas heating line.

THE HEATING AND VENTILATING APPARATUS at the Irs Allen School House, at Burlington, Vt., was tested by E. O. Burrows, heating engineer of the Smith & Anthony Company, Boston, Mass., manufacturers of the heating apparatus, and George H. Holden of the G. S. Blodgett Company, who installed the plant, before the following School Committee: H. O. Wheeler, Charles E. Allen, Dr. D. C. Hawley, C. O. Miller, James Childs and others. The first test was made on the second floor. The supply of fresh air of inlet was 2257 cubic feet per minute. This gives for the 39 seats in the room 57 cubic feet of pure air per seat per minute. The quantity of air exhausted was 2604 cubic feet per minute, which gives for each of the 39 seats 66 cubic feet per minute. The carbonic test in this room showed four and sixteenth parts of gas in each 10,000. (As the outside air is considered pure at four this will be observed as a very gratifying result.) The difference in temperature at four different points in the room on the same level was only 2° F.

Electric Fans for Heating Purposes.

R. J. Feather of the Edison Electric Illuminating Company of Piqua, Ohio, writes to the *Electrical Engineer* as follows concerning a new and ingenious use for the fan motor: "I would like to state a use for the ordinary fan motor which is generally used for cooling a room. It may, I find, be employed to great advantage in a cold snap by placing one of them before the steam radiators in universal service and thus forcing the air between the coils of the radiator. Evidently this arrangement will greatly increase the heat yielding capacity of the radiator by diffusing the heat more rapidly and steadily, and instead of the heat being greatest close to the radiator, a circulation of air is

set up which spreads the heat to every part of the room equally. This idea may help other readers of your journal to maintain the temperature of their rooms sufficiently high and even if they have fan motors."

Iowa Steam Fitters.

The Iowa Steam Fitters met at the Citizens' Association Rooms, Burlington, Iowa, last week, and perfected a State organization. Following were the members present:

Henry Dunker, Davenport; N. O. Holman, Mason City; John Burnside, Des Moines; John E. Allen, Des Moines; H. P. Keyhoe, Ottumwa; P. R. Sutton and Frank Volles, Keokuk; A. R. Barnacle, Boone; Chas. G. Bosch, Burlington; Wallace & McNamara, Des Moines; Des Moines Plumbing Company; W. H. Young & Son, Fairfield; George Kendall & Co., Clinton; John Coles, Des Moines; Henry Ewing, Burlington, and the Davenport local. After transacting the routine business the following officers were elected:

John Collis, president.
Robert Clayton, vice president.
C. W. Rosene, secretary.
P. M. McNamara, treasurer.

The meeting then adjourned, subject to the call of the Executive Committee.

THE J. H. McLAIN COMPANY, manufacturers of hot water and steam heaters and warm air furnaces, have removed their Chicago branch to 58 Dearborn street. In their new location they will have very pleasant quarters, with ample room for the display of samples as well as plenty of space for offices. They will be on the ground floor, so as to be easy of access, and are within the locality now distinctively recognized as the center of the steam, hot water and furnace fraternity. The company do no contracting, but operate an entirely independent business, selling to the general trade. C. B. Matteson is the efficient manager in charge.

Good Advice.

The following excellent suggestion is sent us by a correspondent who signs himself "A. L. B." The moral of the story is so plain that no introduction is needed to emphasize it:

Bob-it-ty-bob go the runners
That carry the hotel 'bus
With a load of guileless drummers
Who have put in the day with us.

We were not ready to buy,
But they were ready to sell,
And I sometimes wish when a drummer I see
That they were all in—well.

I don't mean the jolly drummers,
But the people who send them out,
For I certainly think
That printer's ink

Would bring the same trade about.

A test last week of the chains made at the Charlestown Navy Yard, Boston, showed remarkable results. Five sections of 2½ inch chain, 46 pounds to the link, were strained up to 380,000 pounds, when the officials desisted for fear of breaking the testing machine. The test was much in excess of Government requirements.

ROOFING AND CORNICE.

Conductor Heads.—11.

BY CORNICE WORKER.

Patterns for a Square Molded Leader Head.

In Figs. 16, 17 and 18 are shown the plans, elevations and patterns required for a square molded leader head, the leader to be square in plan and to stand away from the wall as indicated by A in the plan views. Let B C D E in Fig. 16 represent the plan of the leader head, corresponding to J K L M of the elevation, and F G H I the plan of the square pipe, corresponding to O of the

corresponding numbers dropped from the profiles J L and K M at right angles to J K. Lines traced through these intersections, as shown by N P and O R, will be the desired pattern for the front of head. In Fig. 17 is shown the plan, elevation and pattern for the side of the leader head. C B D E represents the plan of the head, corresponding to J K L M of the elevation, and G F H I shows the plan of the square leader, corresponding to O of the elevation. As before explained the leader stands away from the wall, as is indicated by A in plan and side elevation, Fig. 17. It will be noticed that the profiles are

profiles J L and M K. Lines traced through these points of intersection, as shown by N P and O R, will be the required pattern for the sides of the leader head, of which two would be needed, one formed right and the other formed left. The lines numbered 1', 2', 3', 4', 5' and 6' shown outside of the pattern in Fig. 17 correspond to the same numbers shown in the profile of the side elevation facing the wall line. Laps are allowed on the pattern of the side pieces, thus avoiding them on the front and rear pieces. In Fig. 18 is shown the plan, elevation and pattern for the rear of the leader

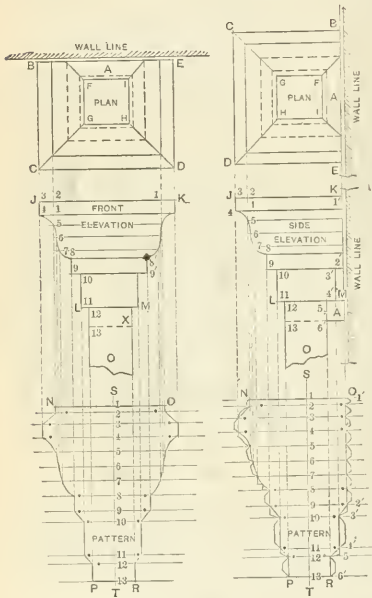


Fig. 16.—Plan, Elevation and Pattern for Front of Leader Head.

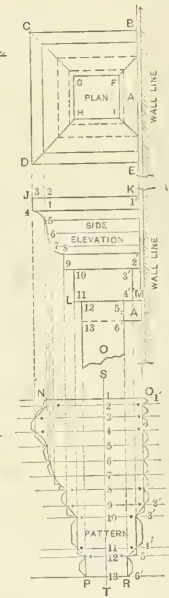


Fig. 17.—Plan, Elevation and Pattern with Lap for Side of Leader Head.

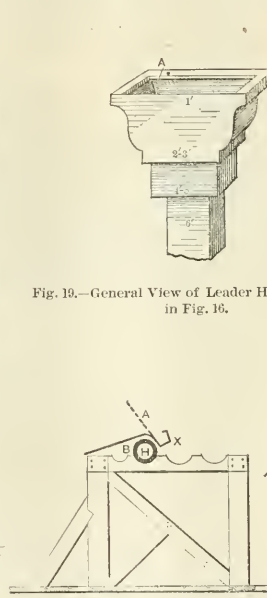


Fig. 19.—General View of Leader Head Indicated in Fig. 16.

Fig. 20.—Method of Forming the Ogee and Cove on the Former.

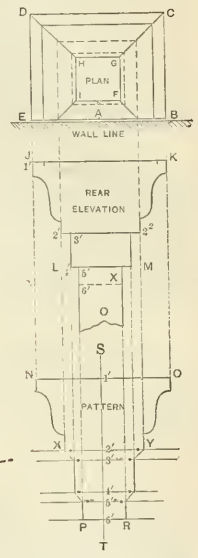


Fig. 18.—Plan, Elevation and Pattern for Rear of Leader Head.

CONDUCTOR HEADS.—DIAGRAMS ILLUSTRATING PATTERNS AND METHOD OF BENDING.

elevation. The dotted lines drawn from the elevation to the plan show their relationship to each other. The dotted line 13 X, drawn across the leader O of the elevation, indicates the flange which will be added to the pattern, the length of which is shown from 12 to 13 in elevation. For the pattern of the front proceed as follows: Divide the curved portions of the profile J L of the front elevation, Fig. 16, into an equal number of parts, as shown by the small figures. At right angles to L M of the front elevation draw the line S T, upon which place the stretchout of the profile J L, as shown by the small figures on the line S T. At right angles to S T and through the small figures draw lines indefinitely as shown, which intersect with lines of

alike in the three elevations shown in Figs. 16, 17 and 18, and that part of the same profile is shown on the side elevation, as indicated by 2', 3', 4' and 5' in Fig. 17, which fills out the projection from the wall. For the pattern of the side proceed as follows: Divide the curved portions of the profile J L into an equal number of parts, as shown by the small figures. At right angles to J K of the side elevation draw the line S T, upon which place the stretchout of the profiles J L in the side elevation, as shown by the small figures on the line S T. At right angles to S T and through the small figures draw lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn at right angles to J K of the side elevation, from the small figures in the

head. D E B C indicates the plan, corresponding to J L M K of the elevation, and H I F G shows the plan view of leader, corresponding to O of the elevation. With the usual projection A, it will be noticed that J 2' 3' K, of the rear elevation in Fig. 18 is simply a flat piece of the same shape as shown in front elevation in Fig. 16 by J 9' 9' K, the side view of which is shown by 1' 2' in the side elevation of Fig. 17. The dotted lines drawn from the side elevation to the rear elevation show the relationship of parts indicated by similar numbers. Number the bends shown in the rear elevation, 1', 2', 3', 4', 5' and 6', corresponding to the figures shown from K to M of the side elevation, Fig. 17.

For the pattern of the rear of head

proceed as follows: At right angles to J K of the rear elevation, Fig. 18, draw the line S T, upon which place the stretchout of the profile K M of the side elevation, Fig. 17, as shown by the small figures on the line S T in Fig. 18. At right angles to S T and through the small figures draw lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn from the numbered heads at right angles to J K of the rear elevation. A line traced through these intersections, as shown by X P R Y, will be part of the rear pattern. For the remainder proceed as follows: The remaining portion above is a duplicate of J 2' 2³ K of the rear elevation. In Fig. 19 is shown the finished view of the leader head, as seen from the rear. The bends marked 1', 2' 3' and 4' 5', Fig. 19, indicate bends of similar numbers shown in the rear elevation. At A of Fig. 19 are shown some of the laps indicated on the pattern of the side shown in Fig. 17.

Forming or Bending the Head.

Fig. 20 represents an end view of the former and indicates the method of forming the ogee moldings. Select the proper size pipe or former and place it in its cross groove. Let J L in Fig. 16 represent the molded head to be formed. The bends 2, 3 and 4 in the profile J L are bent upon the hatchet stake as explained in the previous article and then placed upon the former H in Fig. 20 in the position shown by X A. Hold X firmly against the former and press down A, and it will look as shown by X B. Now place X B upon the former H' in its proper position as shown by X' A'. Hold X' firmly against the former and press down A' and it will look as shown by X' B', which completes the ogee. The square bends shown by 8, 9, 10, 11 and 12 in the profile J L, Fig. 16, are made upon the hatchet stake.

FLASHINGS.

AULD & CONNER have recently made some improvements at their slate quarries, among which may be mentioned the extending by 170 feet of their storehouses at Raceville, N. Y. This makes the entire storage shed about 400 x 40 feet and gives a capacity of about 10,000 squares. This shed is at the railroad terminal of their tramway and connects with their Mammoth Vein Green Quarry. The quarries of the concern are located about 3½ miles from the village of Poughkeepsie, and prior to the building of their tramway all slate had to be hauled that distance by team, which was unsatisfactory for a number of reasons, prominent among which were the frequent and serious delays in shipping. The result was a cable tramway 1½ miles in length, which has a capacity of eight cars per day. This tramway is an endless rope, supported on trestles about 800 feet apart and from 15 to 55 feet high, depending upon the surface of the ground over which it passes. On this rope are wrought iron baskets of sufficient size to carry about one third of a square of slate. The baskets are suspended by an arm or ball, with a saddle resting on the rope in such a way that the baskets remain stationary, while the rope is kept in motion by an engine at the quarry end of the line. The firm are large producers of roofing slate, and have quarries and offices at Poughkeepsie, Vt., and Bangor, Pa. Their principal office, however, is located at 100 Euclid avenue, Cleveland, Ohio.

C. B. RICKERT, 149 Clark street, Chicago, has the contract for the skylights and sheet metal work on the Fort Dearborn Building, Clark and Monroe streets.

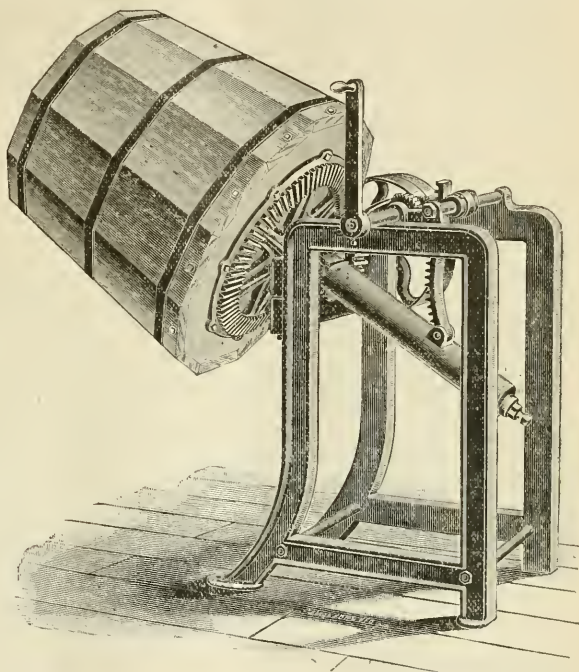
WAGNER BROS., 1350 Diversey street, Chicago, have the contract for the galvanized iron cornice, skylights and slate roofing for the soda water factory of M. Hoffmann, Noble and Blucher streets.

JAMES J. WHITE, 185 Dearborn street, Chicago, is to furnish about 200 squares of corrugated iron sidings, gutters and conductors for the Gates Iron Works, Elston avenue and Bloomingdale road.

KURTZ & Co., 2427-29 Calumet avenue, Chicago, are furnishing the copper cornices for the residence of T. Leonard, Grand boulevard and Forty-eighth street.

WILLIAMS & MANOGUE of Grand street, Troy, N. Y., have their full force of men now on the State armories jobs, both at Niagara Falls and at Glens Falls, N. Y. They are doing the slate and metal work on both armories.

THE CLASON COMPANY of No. 3 Charles street, Providence, R. I., have just received the contract from Messrs. Norcross Brothers for the slate and copper work on the Francis S. Kinney new mansion at Narragansett Pier, R. I.



The Baird Tilting Tumbling Barrel.

J. J. COLVIN, 159 La Salle street, Chicago, is doing the galvanized iron, tin and copper work on the two residences of J. L. Cochran, Edgewater.

FRED. HARTMANN, 143 Wells street, is furnishing a large amount of galvanized iron work to be used in connection with refrigerating machines.

G. DROUVE, Bridgeport, Conn., has several thousand dollars' worth of copper in his shop on Clinton street, part of which is being made up into skylights for the roof of the big new building of the Farrel Foundry & Machine Company in Ansonia.

C. B. RICKERT, 194 Clark street, Chicago, is to furnish the copper work and tile roofing for the residence of Mrs. Emmons Blaine, Rush and Erie streets.

THE KNISLEY & YELDHAM COMPANY, 68-74 West Monroe street, Chicago, have the contract for copper work and Spanish tile roofing on the residence of William Metzger, Washington boulevard and Sacramento avenue.

The copper to be used is 18-ounce both cold rolled and soft. Some five tons will be required. They have also just finished a large copper cornice for Contractor Bishop on the new Boston store.

The Baird Tilting Tumbling Barrel.

The tilting tumbling barrel made by the Baird Machine Company of Oakville, Conn., is formed with a splindle projecting from the bottom, as shown in the illustration. This splindle enters a sleeve pivoted to swing at its upper end and having a segmental rack attached near its lower end. This rack engages with a pinion mounted on a crank shaft, by means of which the barrel may be given any desired inclination. It is held in position by a ratchet and pawl. The barrel is driven through bevel gearing, as shown. These barrels are made of wood, steel or brass, the ordinary size being 29 inches diameter at the bottom, 24 inches at the top and 26 inches deep inside.

PLUMBING and GAS FITTING.

Pennsylvania Plumbing Law.

A bill introduced to the Legislature at Harrisburg, Pa., to establish a Bureau of Plumbing and House Drainage in all cities of the State has already passed the first reading in the House. The bill places the bureau under the supervision of the Department of Public Safety, and makes it the duty of the director of the department to appoint one or more suitable persons as inspectors for the bureau, the compensation of such inspectors to be fixed by the councils of the city in which the bureau has been established.

The inspectors are to pass upon applications of persons who desire to engage in or continue the business of plumbing, gas fitting and house drainage, and if they find the applicant competent, to report to the Director of Public Safety, who shall issue a certificate to the applicants, permitting them to conduct the plumbing business.

The inspectors are also required to examine all buildings in the city to determine their condition as to the plumbing, gas fitting, drainage and ventilation, and when the work is found defective they shall have power to order the removal, substitution or repair of the condemned material or work if it is not done by the owners within 15 days after notification.

Any person refusing to admit the inspectors upon his premises for the purpose of examining the plumbing or drainage shall be deemed guilty of a misdemeanor, and, upon conviction, for each offense shall be subject to a fine not exceeding \$100, and in default of the payment of the fine shall be liable to imprisonment not exceeding 30 days.

House Drainage Inspection.

Chief Inspector of House Drainage George P. Hughes of Philadelphia has made his annual report. It shows that plans for 4787 new and 17,414 old buildings were approved. The total number of inspection visits made during the year was 50,313, and there were referred from the nuisance division of the bureau to the house drainage division complaints involving 662 buildings, of which 619 were inspected and reported to the Board of Health with a recommendation for their abatement.

"The business of this division during the year," the report reads, "exceeded that of any other year since its organization. The greatest amount prior to this was in 1893, when 17,231 plans were approved, while this year the number was 22,201, an increase of 4970 over 1893. This was direct revenue to the city through the division of \$32,201. The large increase in business, owing to the demand, was the cause of shipments to this market of large quantities of inferior material, principally iron pipe fittings, which were promptly condemned and removed from the work. In order to detect the character of material the inspectors were each furnished with a pair of registering calipers by which the thickness of the pipe or fittings might be determined. As a consequence of the close inspection of the

material, the inferior kind is now rarely found on the work.

"The work constructed extended over the entire city and county, and as the inspectors' time is entirely occupied in responding to applications for the inspection of work under construction, opportunities were offered, and in many instances embraced by a certain class of plumbers, to violate the rules of the board. After a short time, however, these violations were discovered and, with the co-operation of the owners, they were corrected and the work made to conform to the rules at an expense of hundreds of dollars to the violators, which has had a salutary effect."

A Handy Pipe Holder.

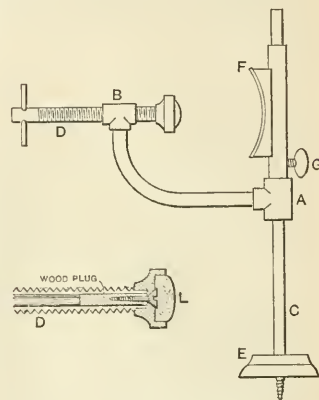
BY OLIVER TWIST.

This is a tool that every plumber will appreciate, and one which every one may make for himself with very little trouble and expense. They are intended to take the place of a half dozen bricks or so, which have been used from "away back" by plumbers to hold by their weight two or more pieces of pipe from moving while the joint was being wiped. The bricks often had a fashion of taking a slide just when they should have been immovable, and consequently were responsible for considerable "cussin'." Referring to the illustration, A is a tee $\frac{3}{4}$ x $\frac{1}{4}$ inch. B is a tee $\frac{1}{2}$ inch. Take a piece of $\frac{1}{2}$ inch pipe and bend it as shown to connect these two tees. Leave about $\frac{3}{4}$ inches between B and F, so that when finished they will allow a 2 inch pipe to pass through easily. Cut a $\frac{1}{2}$ inch nipple about 4 inches long with a thread on one end only, and screw into A. Take a piece of sheet brass or lead 1 inch wide and $2\frac{1}{2}$ inches long, cut into an oval shape and curve a little and solder it to the $\frac{1}{2}$ -inch nipple, as at F. To make a thumb screw as shown at G, drill a hole $\frac{1}{2}$ inch in diameter and tap it to fit a $\frac{1}{2}$ -inch stove bolt and solder on a small piece of sheet brass to give a hold for the fingers to turn it.

This allows the vise to slide up and down the standard C to suit the work. C is a piece of brass, or iron pipe, that will pass through the $\frac{1}{2}$ inch nipple freely and is 10 inches long, being tapped into a flange to form a base. Now take $1\frac{1}{2}$ inch screw nail, cut off the head and solder the remainder into the end of the pipe C, where it comes through the flange E, as shown. D is a piece of pipe 5 inches long, having a $\frac{3}{4}$ -inch hole drilled through it, $\frac{1}{4}$ inch from one end, through which is put a piece of wire 2 inches long and the end of the pipe filled with solder. It is threaded up 4 inches, so as to screw easily through the tee B. At the left of the sketch is an enlarged view showing how to fix the cap on the end, the cap being nothing more than the stuffing box of an old basin cock. To fix it to the nipple D, file off the thread for $\frac{1}{4}$ inch back from the end and drive in a wooden plug. Then, by means of a screw and washer, the cap may be fastened to the nipple so that it turns freely. A thick leather washer is then

placed in the recess, as at L, thus preventing the lead pipe from being bruised.

Three of these holders form a set, so that branch joints may be wiped. When in use the standard C is screwed into 1-inch board or the work bench, and the remainder slipped down over this and fastened by the thumb screw G, at any height. To wipe an upright



A Handy Pipe Holder.—General View with Enlarged Sectional View of Clamp.

joint screw them into the wall. With a little practice they will be found adaptable to all requirements.

TRAPS AND VENTS.

BOWEN & BEACH, Medina, N. Y., are sending circulars to the plumbers of their improved vent cap, which fits light or heavy soil pipe and is attached without caulking or screws.

THE PLUMBER will find a very handsome new bathtub supply and waste on exhibition in the showroom of the Henry Huber Company, 81 Beekman street, New York. The fixture is quite elaborate and is placed entirely outside of the tub, resting on a tripod, with an ornamented curved supply to discharge the water into the tub. It is very attractive and one of the very latest bath fixtures.

THE MASTER PLUMBERS' ASSOCIATION of Philadelphia has sent to the Legislature at Harrisburg, Pa., a petition asking that the plumbing law now before that body be changed so that it will in no way affect the act of 1885, which is satisfactory alike to plumbers, builders and the public. Secretary Harkness and several members of the Philadelphia Master Plumbers' Association have spoken before the legislative committee in support of their petition.

McINERNEY & HICKEY have been granted a plumbing license at Minneapolis, Minn.

EDWARD F. GOULD, the New York representative of the Pittsburgh Brass Company, Pittsburgh, Pa., is showing

the plumbing trade a handsomely nickel plated comb and brush bracket as one of their many bathroom specialties.

A BILL has been introduced in the Michigan Legislature to regulate and control plumbers and plumbing in that State.

WM. M. OCKERMAN has begun business at Greenville, Ohio, and will do all kinds of tin, copper and sheet iron work, plumbing and pump fitting.

FRANK PARKE, Twenty-third avenue and Eighth street, Meridian, Miss., is an ambitious young mechanic whose enterprise ought to insure him the success he is seeking. He is but 16 years old and has already launched out for himself in sheet metal work, and is prepared to do small, simple jobs of plumbing. He issues a circular addressed to the public under date of January 15, in which he asks that they give him a trial.

J. W. COMMERFORD, Joplin, Mo., has bought out the business of J. D. Kane and likewise taken the business of the Joplin Water Works Company, he having been connected with the latter concern for some years as foreman of the plumbing department.

OF THE 53 master plumbers in the city of Rochester, N. Y., says a local paper, but two have complied with the statute which requires that they renew their licenses the first of the year. Those who have violated the law are liable to prosecution by the Health Department. It is required by law that every master plumber in Rochester shall first pass an examination before the Board of Plumbing Inspectors and then secure a license from the Executive Board, after which a certificate must be secured from the office of the Board of Health. The certificates are renewed without cost.

J. H. & W. H. RILEY succeed Shumway & Riley in the plumbing business at Northampton, Mass.

J. DILLON, Doylestown, Pa., is using a new cellar drainer in the houses of some of his customers.

THE IOWA STATE MASTER PLUMBERS' ASSOCIATION met last week in annual session at Burlington, Iowa, with about 30 delegates from various cities of the State. The meeting was called to order by President J. A. Harris of Des Moines. The Mayor of the city made an address of welcome, and other addresses were made by President Harris and President H. D. Crane of the National Association of Master Steam and Hot Water Fitters of the United States, and Mr. Aherns, State president of the same association. The second day of the meeting was consumed with routine work, the chief of which was the election of officers. Those selected are: President, Henry Ewing, Burlington; vice-president, Robert Clayton, Davenport; secretary, John E. Allen, Des Moines; treasurer, P. J. Barry, Muscatine. The delegates were entertained by the local plumbers with a banquet.

BARRETT & WALLACE, Cohoes, N. Y., tinners, plumbers and jobbers, have moved their place of business to 220 Remsen street.

DETROIT is considering the erection of a \$60,000 public lavatory on the Campus Martius, which will be an imposing structure, heated by steam.

KING & HYLAND COMPANY have been incorporated at Chicago, with a capital stock of \$10,000, to manufacture plumbing

and gas fitting apparatus. The incorporators are John A. King, Michael S. Hyland and Robert J. Bieg.

JOHN D. ELLIOTT, George F. Tobey and William Deacon have made application for civil service examination as inspectors of plumbing at New Bedford, Mass.

WILL ADAMS of Dryden, N. Y., and Fred. Bauchle of Owego have formed a copartnership and rented the Bouton shop next the town hall on South street, Dryden, N. Y., where they will carry on a general business as practical plumbers, tinners, and general jobbers in hot water, hot air and steam heating apparatus.

HOWARD W. GEIST and Daniel K. March have associated themselves in the plumbing, tinning and stove business at 453 High street, Pottsville, Pa.

W. G. WATERS has recently opened a plumbing establishment at 114 Grand avenue, New Haven, Conn., and already has the plumbing contracts on a number of houses in that section. He will handle the Page steam heaters and will make a specialty of oil and gas heaters.

ROCKVILLE, CONN., has taken steps to secure a system of sewers, so it is reported by the New Haven Record.

J. E. JACKSON of the firm of Jackson & Longton, Rhinelander, Wis., was elected sergeant-at-arms of the Wisconsin State Association of Master Plumbers. A wrong address for his firm was accidentally given in our report of the recent convention.

THE TORONTO STEEL CLAD BATH & METAL COMPANY, LIMITED, and the Booth Copper Company of Toronto send out conjointly a serviceable reminder of their concerns in the shape of a calendar dead pad, on each sheet of which are places for four memoranda, the spaces carrying the day of the month, week and year. There is also reference to the Resisto copper boilers and the Steel Clad baths.

THE COPARTNERSHIP existing under the name of F. D. Dumond & Son, plumbers, 25 South Clinton street, Rochester, N. Y., has been dissolved by mutual consent, the business to be continued by A. A. Dumond at the same address.

THE selling of a mixture of common metals for a high grade aluminum alloy was recently brought to light, and illustrates the means that are taken by unscrupulous persons to get a little money at the expense of the reputation of this new metal. Aluminum has had widely extending uses during the past year or so, since its price has been brought within reasonable limits, and has been largely employed in the manufacture of kitchen utensils and certain sanitary articles. We hope that there will be no other cases of imposture, and that goods sold as all or in part aluminum may not be cheap alloys that will soon tarnish and be unsatisfactory for the purposes to which they are put.

IMPORTANT REDUCTIONS have been made in the prices of Mott's Imperial porcelain, Colonial and Yorkshire ware. By reason of largely increased means of production, the J. L. Mott Iron Works of New York and Chicago are enabled to announce substantial reductions in the prices of their Imperial porcelain, Colonial and Yorkshire ware, bathtubs, sitz baths, sinks, wash trays, &c. These articles are the

perfection of cleanliness and durability, being molded in one solid piece of glazed porcelain about 1½ inches thick. Circulars announcing the reductions are being mailed.

CAPT. ANSON WITHEY has formed a partnership with J. E. Hubbard in the plumbing business at Greenfield, Mass.

HARRY A. BLACK PLUMBING COMPANY, Chicago, have been incorporated with a capital stock of \$5000. The incorporators are W. D. Anderson, Conrad Kohler and Charles Daft.

A VERDICT has just been rendered in the New York courts which ought to help along the cause of tenement house reform. The plaintiff in the case hired a tenement of the defendant which proved to be in bad sanitary condition, in consequence of which condition the plaintiff lost two of his children. He brought suit for damages against the landlord and recovered \$2000.

PLUMBERS' LICENSES have been granted to John J. Keitt, John P. Langew and James J. Gordon to make connections with the water mains of Jersey City, N. J., also to do general plumbing work.

THE COLWELL LRAD COMPANY, 63 Centre street, New York, have secured a building on Worth street which they will use for the storage of sanitary goods and earthenware. This building is connected with their offices and salesroom on Centre street by a bridge. They now have a frontage on three streets, the entrance to their sheet lead and lead pipe mill being on Pearl street.

ONE OF THE NEWEST BATHTUBS on the market is made by R. M. Wilson, Rome, N. Y., and is on exhibition at the New York salesroom, 92 Walker street. The tub is made of sheet copper of ample strength to support the weight of a bather. It is heavily tinned on the inside, and on the outside the copper is cleaned and presents its natural color, being protected from the atmosphere by a coat of durable varnish. It is supported on bronzed cast iron legs of ornamental design and has a wood rim. It is provided with a waste and overflow and arranged for standard bath cocks.

SOME NEW THINGS in bathtub decoration are shown in the sample rooms of the J. L. Mott Iron Works, Beekman and Cliff streets, New York. The ornamentation is of the relief character, artistic in design, with the effect made brilliant by the highest points being touched with gold.

A BILL has been introduced in the New Jersey Legislature to reduce the price of gas to \$1 per thousand. A contractor before the committee stated that gas could be profitably made at less than 50 cents. Representatives of the gas companies asked that the report of the committee be delayed one week to enable them to speak fully on the measure.

JOLIET SUPPLY COMPANY have been incorporated, at Joliet, Ill., with a capital stock of \$20,000, to deal in plumbers' supplies. The incorporators are William Douglas, Joseph E. Ralph and Charles W. Munn.

THE BOARD OF HEALTH of Waco, Texas, has been petitioned to take action to secure a plumbing inspector for the city, and a committee has been appointed to investigate and report on the subject.

Standing Committees of New York Plumbers.

The various committees of the Association of Master Plumbers of New York for 1895 are as follows:

PROTECTION.

Wm. McDermott.
J. S. Lindsay.
A. H. Brown.
Samuel Malcolm.
John Spence.

CONFERENCE.

J. Gillroy.
H. J. Pattison.
T. J. Cummins.
J. W. O'Brien.
Alexander Bryant.

TRADE SCHOOL.

Edward Murphy.
Col. George D. Scott.
James Muir.
Frank Reynolds.
Thomas J. Tuomey.

AUDITING.

Frank Reynolds.
Edward Murphy.
John E. Tuomey.

LEGISLATION.

Wm. Montgomery.
Alexander Bryant.
Thomas J. Tuomey.
Thomas F. Gaynor.
M. J. McDermott.

LAW.

Colin Campbell.
J. Whelan.
Milton Schnaier.
Wm. R. Hill.
Chas. H. Kranichfelt.

DEPARTMENT.

John Yule.
J. McEntee.
Paul Euell.

New Publications.

HAND BOOK OF PRACTICAL MECHANICS.
By Charles H. Saunders, Ph.B., Yale.
Size 4 x 6 inches; 116 pages; published by the Student Publishing Company, Hartford, Conn., 1895. Price \$1.

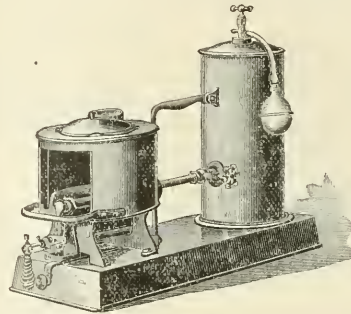
Mechanics and those interested in the building and running of machines will derive much assistance from this little volume, which contains in compact form a large amount of useful information. Great care has been taken in the work to simplify the calculations so far as possible, and in addition to what is of particular reference to machine shop work, there are other rules and formulas of wider interest. The book, for instance, begins with rules for calculating the bursting pressures of cylinders and pipes. The full title as given on the first page indicates the scope of the work. It describes a hand book of practical mechanics for use in the shop and drafting room, containing tables, rules and formulas and solutions of practical problems by simple and quick methods. Logarithms, sine, cosine and tangent tables, areas and circumferences, decimal equivalents of an inch, a foot and a pound; bevel and spur gears, worm and worm gears, United States standard bolts and nuts, tapping drills, lathe thread cutting, cams, &c.

The tide of emigration still sets eastward, the number of steerage passengers leaving New York by the transatlantic lines this month having been

larger than the arrivals. This has been the case for several months, leaving the balance of trade in immigrants, so to speak, against the United States.

Canners' and Tanners' Furnace.

The Burgess Soldering Furnace Company, Columbus, Ohio, are placing on the market a new combination furnace, Gem No. 8, which is shown in the accompanying illustration. It is especially adapted for canning factories and for heavy work. The opening in hood of furnace will accommodate two 3-inch capping irons, and by removing the top cover will also accommodate the one or more tanners' soldering coppers that are used in connection with capping irons. The plate on which the coppers rest is made of cast iron deflected with projections which form flues for conducting heat under same. The sides are also equipped with flue plates which protect the bolts and conduct heat from front to rear of hood. The slotted burner is cylindrical and made of heavy cast iron, the shape being such that solder cannot fall into the perforations.



Canners' and Tanners' Furnace.

The heat is distributed the full length of the irons, and the burner being recessed in front and back insures durability. It is also furnished with a sliding drip cup, the knob of which is always cool. The plate on which the coppers rest is but a few inches from the workman's bench, an advantage to which special attention is directed. The reservoir shown is pneumatic and fireproof, which cannot be filled while the burner is lighted, thus avoiding accidents. It is made of XXXX tinued steel or copper, and holds 2 gallons of gasoline, sufficient to last several days. The patent rubber bulb used on this furnace is made of heavy black rubber, the valves of which are located between bulb and tube. The air, oil and regulating valves are all furnished with stuffing nuts. The regulating valve is supplied with an Alaska handle, which always remains cool. The base on which the furnace and reservoir rest is made of refined steel. The manufacturers state that these furnaces are used by a number of the leading canning factories, and are giving the best of satisfaction. They also add that this furnace can be used by tinmiths and roofers, and is guaranteed to work out of doors in all kinds of weather.

The system of street railway mail service has proved so successful in several cities that the Post Office Department intend adopting it in all the larger cities of the United States.

News and Notes.

The American Flint Glass Workers' Union is making arrangements to start plants of its own in different parts of the country on a co-operative basis.

The Journal of the Statistical Society of Paris points out the fact that, notwithstanding the large bounties it enjoys, the shipping industry of France is showing a serious falling off. The tonnage of vessels sailing under the French flag decreased from 9,704,191 tons in 1891 to 8,382,311 tons in 1893. In 1894 the situation was no better, so far as could be judged from the returns for the first nine months of the year, which showed a decrease of 6 per cent. as compared with the same period of 1893.

In Chicago last week Judge Grosscup handed down a very important decision in the suit of the Thomson-Houston Company vs. the Western Electric Company, for infringement of their patent for an automatic regulator of dynamo electric machines. These regulators are used on all dynamo electric machines,

and the Thomson-Houston Company had the right to sell the important device, the patent for which was valued at \$2,000,000. In the opinion of the Court it was held that the Thomson-Houston patent is invalid, on the ground that it possesses no novelty in view of an earlier patent for a similar invention which "discloses a device almost identical with that of the patent in suit."

The cycle industry is referred to as being one of the most flourishing industries in France at the present time. According to statistics issued by the French Ministry of Commerce, the total trade in cycles, both import and export, last year, aggregated in value about \$2,000,000.

A strong opposition exists in Philadelphia to the present plans for the new railway bridge over the Delaware River.

State Engineer Adams, in his annual report just submitted to the New York State Legislature, advocates the deepening of the Erie and Oswego Canals to 9 feet, and of the Champlain Canal to 7 feet, as well as the lengthening of the single locks on the canals. In treating of electricity as a motive power he asserts that greater speed and economy of towing can only be obtained by this medium.

The Brooklyn Eagle estimates the net weekly loss caused to the city of Brooklyn by the recent street railroad strike at rather over \$1,000,000.

TIN PLATES.

A Tin Plate Suggestion.

The following, which has reached us from a correspondent firm in Vermont, contains a hint which it seems might be profitably taken by domestic tin plate manufacturers and dealers:

We would like to make a suggestion through *The Metal Worker* for the interest of the buyer of American tin plates, as well as for that of the manufacturer and seller of the same, and it is this: That the different houses that sell American tin plates send to their customers circulars or pamphlets of all the American tin plates they have to sell, with prices of same, weight, sizes, &c., and their relative merits as compared with the standard imported plates, such as the Melyn, Allaway, Steel Coke or B. V. grade, as quoted in *The Metal Worker*, for bright plates, and M. F., Pontymister, Worcester, Dean, Abercarne, &c., grades in roofing plates. We believe that most of the American tin plate buyers are still ignorant of the real merits of the American made plates; at least they are not nearly as well posted in regard to them as they are on the imported plates. I know that we plead ignorance in this respect, although we do not buy as many plates now as a few years ago, and wish for more light on the subject. We believe this will work for the benefit of Americans, both buyers and sellers.

A Correction.

Respecting an item that appeared in *The Metal Worker* last week, which purported to quote the opinions of John Jarrett, secretary and treasurer of the Tinned Plate Manufacturers' Association of the United States, as expressed in the New York *Herald*, of January 21, we have received the following letter from Mr. Jarrett, which we print below:

I was very much surprised in looking over *The Metal Worker* of this week to find in the Scrap column of the Tin Plate Department an item that I had written to the New York *Herald*, giving as my opinion that, with the slight reduction in wages agreed to by the tin plate works, the American mills can be operated with a fair percentage of profit.

Permit me to say that I have not written to the New York *Herald*, nor have I at any time expressed myself in the manner indicated. On the other hand all through the wages controversy between the tin plate manufacturers and the Amalgamated Association I have steadfastly maintained that the manufacturers should secure the full reduction they had demanded to permit them to operate their mills at a low percentage of profit. The compromised wages accepted by a few of the manufacturers lately is not satisfactory and in my opinion will not secure remunerative profits to the mills and another adjustment of wages will be necessary at a very early day.

SCRAP.

FORD & DONNELLY, Kokomo, Ind., have placed in the tinning house of the Atlanta Steel & Tin Plate Company, Atlanta, Ind., four machines for cleaning tin plates by drawing them through bran. It is claimed that these machines will not only greatly reduce the amount of hand labor required in cleaning the tinned plates, but will clean them much better, a point which will be appreciated by consumers of tin plates for canning purposes. Ford & Donnelly now equip complete tinning plants, with the exception of mills. A machine they are at present working on is a tin plate polisher of double the ordinary capacity, yet occupying very little more space, and, we understand, not greatly exceeding in cost the single capacity machine. Plates passed through this machine come out, it is said, like burnished silver in five seconds of time.

In giving his workmen notice of his intention to close down the Morfa Tin Plate Works, Llanelly, Wales, at the end of January, John S. Tregoning, the proprietor, said that the concessions recently made by the tin plate workers in the Llanelly district were not sufficient to enable the manufacturers to meet for long the local competition in America. The boxes of tin plates now stored at the Morfa works, he said, were not salable at a shilling off the cost of manufacture and he did not see his way to go on making plates at a loss.

WORK on the National Tin Plate Works plant, North Anderson, Ind., is reported to be progressing rapidly. The main building was finished this week, and the machinery and engine rooms are completed and under cover.

A DISPATCH from Elwood, Ind., to the Cincinnati *Commercial Gazette* states that since last week Chicago and Cincinnati capitalists who are interested in the manufacture of tin plate have decided to locate a five-mill plant between Elwood and Franklin, on the Quick City land syndicate's property. They made the syndicate the proposition to erect the plant, which will employ 300 men, provided a subsidy of \$22,000 be raised for them. This amount has almost been raised, and every detail of the deal will, it is expected, be closed up shortly. The company intend to have the plant in operation by August.

THE KING LUMBER & SAW MILL COMPANY, Atlanta, Ind., are erecting a plant for the manufacture of boxes from native hardwoods. Machinery of latest design is being put in, and boxes of all kinds will be made, but boxes for tin plate will be their specialty. They have already contracted with the Atlanta Steel & Tin Plate Company for several months' supply.

ELLWOOD TIN PLATE COMPANY, Elwood City, Pa., for whom Samuel A. Sague, 206 and 207 Western Reserve Building, Cleveland, Ohio, is general agent, issue a quotation sheet of their Bishop brand of tin andterne plates. These include four grades of charcoal

bright and one of coke bright plates, as well as four varieties of guaranteedterne plates.

J. A. BRUNER, who had charge of the tin plate sales department of the St. Louis Stamping Company, St. Louis, Mo., severed his connection with that firm on February 1 to enter the fire insurance business. Mr. Bruner will be connected with Charles L. Crane & Co., St. Louis, and his many friends will wish him abundant success in his new field.

THE AMERICAN TIN PLATE COMPANY of Elwood, Ind., have put in operation the new four-mill addition to their rolling mill.

THE MONONGAHELA TIN PLATE COMPANY, Pittsburgh, of which Senator M. S. Quay is a large stockholder, signed the Amalgamated Association tin plate scale last week. Some of the mills of this concern are expected to be put in operation on Monday, February 4.

THE PLANT of the Vulcan Iron Company, Limited, New Castle, Pa., manufacturers of rolling mill and tin plate machinery, is in operation to full capacity. Among contracts now on hand by this firm may be mentioned a new design of pickling machine for the Britton Rolling Mill Company, Cleveland, Ohio; two trimming shears for the Montpelier Sheet & Tin Plate Company, Montpelier, Ind.; two patent rod reels for the New Haven Rolling Mill Company, New Haven, Conn.; all the cast iron work for 18 sheet mills, pair furnaces and an annealing carriage for the Monongahela Tin Plate Company of Pittsburgh, Pa.

THE ELLWOOD TIN PLATE COMPANY, Elwood City, Pa., will accept the Amalgamated Association compromise scale, providing for a reduction of 18 per cent. on rolling and 12½ per cent. on heating and doubling on common gauges. This plant, however, will be operated on a non-union basis, and the Amalgamated Association scale will not be signed.

IMPORTANT INTERESTS having joined with the New Castle Tin Plate plant, at New Castle, Pa., the same will be very largely increased. It is reported that a large New York importing firm and a leading can manufacturer of Chicago have become interested.

THE PHILLIPS TIN PLATE COMPANY, Philadelphia, advise us that they have abandoned the word "Waldo" as a brand name for one of their grades of roofing plates, that name having been in the market for some years. It has been replaced by their new brand, "F. R. P. Extra," which is the best palm oil process roofing plate made by the firm.

THE ENTIRE PLANT of the Scottdale Iron & Steel Company, Limited, Scottdale, Pa., manufacturers of iron and steel sheets, is in full operation, and prospects for the future are very encouraging. The equipment of this plant is being increased by the addition of another cold rolling mill, which is ex-

pected to be in operation in about a month. This concern are experimenting with the use of coke for fuel in their heating furnaces, with a view to determining the relative cost of coal, which may be displaced if the experiment is satisfactory, so far as regular and sufficient heat is concerned.

THE AMERICAN TIN PLATE WORKS are rapidly falling again into the line of activity, some after signing the Amalgamated Association scale, and others, on a non-union basis, by local arrangement with their employees. At present about three-fourths of the total productive capacity of the domestic tin plate plants are running, and more works are on the point of starting up. The tin plate wage trouble is, in fact, practically at an end. The last idle firm of the Tinned Plate Manufacturers' Association, the Etna Standard Iron & Steel Company of Bridgeport, Ohio, are reported to have signed the compromise scale of the Amalgamated Association a day or two ago, and their mills, which are among the largest in the country, will be again in operation in a few days.

A PRESS DISPATCH from Pittsburgh announces that another conference of tin plate workers and their employers will soon be held, with the view, through mutual concessions, of removing the obstacles which still prevent some of the manufacturers from coming to terms with their workmen and starting their idle mills.

SEVERAL MORE Welsh tin plate works have been closed down this week, including those of the Mansel Tin Plate Company, Port Talbot; Glanbeudy Tin Plate Company, Brynaman, and Llansamlet Tin Plate Company, Worcester, Swansea. The situation of the industry in South Wales is regarded as very unpromising.

RUMORS are prevalent of impending heavy failures in the Welsh tin plate trade. The financial position of two large works in South Wales, of which the names are not given, is said by latest reports to be very precarious; and the failure for \$400,000 of a leading merchant in that district connected with three tin plate mills is announced. Fears are entertained that this may be followed by the collapse of other tin plate concerns.

THE FALCON TIN PLATE AND SHEET COMPANY, Niles, Ohio, have accepted the Amalgamated Association compromise scale and the plant of this concern, which has been idle for some time, resumed operations on Monday, the 29th ult., with a good volume of orders.

THE CUSTOM HOUSE RECORDS of San Francisco show that the imports of tin andterne plates at that port during last year amounted to 23,857,008 pounds, valued at \$671,596. This exhibit indicates a falling off of nearly 50 per cent. as compared with 1893. The decrease is attributed to heavy stocks left over from that year.

MERCHANT & CO. (INC.), of Philadelphia, New York and Chicago, have issued a bright illustrated card advertising their Tandem continuous roofing tin. A man is represented in the three stages of sleeping, waking and being wide awake, which are adroitly worked in as a direct appeal to the reader. The advantages of the Tandem tin are then tersely and takingly set forth.

Labor and Public Carriers.

The Brooklyn trolley car strike has brought out a flood of confused utterances in the public press, both editorially and through correspondents, says *The Iron Age*. There has been a good deal of weak sentiment and very little calm reasoning. There has been much dilly-dallying with serious issues and altogether too little vigorous action and emphatic talk. No sharp, clear presentation has been made of the rights and the responsibilities of the three parties to the contest. When companies operating under charter from the State are performing a service for the general public, the situation is radically different from that involved when there is a disagreement between a private employer and his men. A third party intervenes, which has its rights and its duties, and that is the public as represented by local or State government. The carrier derives special privileges through the grant to him of a complete or partial monopoly, and incurs responsibilities which should be clearly defined. He has duties to perform as against the other two parties, the employees and the public. Reciprocal obligations rest with the employees, who share with the employer his responsibility as to the public.

It may be acknowledged that hitherto both companies and men have usually proceeded on the assumption that their relations were simply governed by their own will. In the Brooklyn strike the rights of the public have been asserted and that in a way which needs very sharp correction. Judge Gaynor has undertaken to define them. He may have correctly interpreted the law. If he has, the laws must be subjected to a thorough modification. It would be a crying injustice if public carriers were to be bound to perform their service without any reference whatever to their relations with their men.

The great trouble which lies at the bottom of the whole matter is that one of the three parties is absolutely irresponsible, and that is the body of men who constitute the operatives. They are not collectively or individually responsible financially. If organized, their leaders, or the majority of their members, have not power enough over the bad element to prevent violence and breaking of the peace, even though they must know that such behavior is the worst that can befall their cause.

Apparently the only party which can be held readily to the full measure of its responsibility is the common carrier. Its capital is fixedly invested. Its property is tangible and easily seized, and apparently the socialistic trend of some of our modern judiciary prefers to move against it as offering the line of least resistance.

The assertion of the rights of the public in matters of this kind is all very well and good, but those rights can only be maintained when the obligations with which they are coupled are fully met. The principal of these obligations is the maintenance of peace, which the men share, and the full protection of the other parties in inter-

est, which rests with the Executive as the representative of the people. In Brooklyn that protection was not afforded and for that reason no compulsory measures against the public carriers are justified.

As it is, the utter irresponsibility of one party makes the questions at issue difficult of solution. It has been suggested that both employers and employees who are engaged in service of a public character should not abandon their work without giving ample notice. Such a condition would be valuable as a protection to the public, but there is no means whatever for enforcing it upon the men. They could not and would not give any bonds as security for the performance of such a contract, any more than they do now for the carrying out of one of the most fundamental duties of every citizen—that of keeping the peace. It is evident, then, that where no guarantee of good behavior whatever exist, the only course is the sharpest compulsion, sharper by far than that which has characterized the action of municipal and State governments in the Chicago and the Brooklyn strikes.

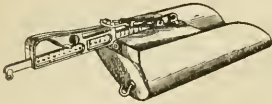
Building Operations in 1894.

The returns of the Department of Buildings of the City of New York for the year ending December 31, 1894, present, says *Carpentry and Building*, an interesting study, showing, as they do, the variety of buildings for which plans and specifications were filed, and also the amounts involved in their erection. Considering the extreme business depression during the 12 months covered by these returns, and the gloomy outlook at the beginning of last year, the figures cannot fail to be regarded as better than generally expected. True it is that the total valuation of building operations for 1894 falls a little short of 1893, but on the other hand, the number of plans filed with the department shows an increase of several hundred, which brings the average cost per building considerably lower than for 1893, when it was the highest on record. The returns of the Department of Buildings show that during the past year 2583 structures were planned to cost \$51,673,997, as against 2284 buildings, costing \$54,859,318 in 1893. Considering first the private dwellings, we find that there were 1149 for which plans and specifications were filed, estimated to cost \$10,931,095, this being an increase over 1893 in the number of dwellings projected, but representing a slight decrease in the valuation. Of flats and tenements there were 777 projected in 1894, calling for an expenditure of \$18,020,500, while for hotels, stores, churches and school houses 181 permits were granted, the amount involved being \$9,759,945. The number of office buildings planned last year was 21, being just half the number in 1893, but costing nearly the same. Of workshops and manufactories there were 88 projected last year, estimated to cost \$3,399,550, while in 1893 there were 141 projected, estimated to cost \$3,296,400. The plans filed for miscellaneous buildings, stables, &c., numbered 367, calling for an outlay of \$2,944,757. Of this number 19 were for places of amusement, estimated to cost \$1,373,700. The plans and specifications for alterations to buildings filed and acted upon by the Department during the past year numbered 1902, estimated to cost \$4,888,610. These latter figures as compared with 1893 show a heavy decrease, especially in the amount of money involved.

THE RETAIL STORE.

Combined Scoop and Scale.

W. G. Sanger, 4110 Pennsylvania avenue, St. Louis, Mo., is placing on the market a combined scoop and scale, as illustrated herewith. The mechanism for weighing is ingeniously arranged,



Combined Scoop and Scale.

and can be used as a scoop separately. There is a hook attached to the bottom of the scoop for weighing meats or bulky packages of any kind. The device is strongly made, and is graduated to weigh from $\frac{1}{2}$ ounce to 4 pounds.

Tubular Steel Wheelbarrows.

The wheelbarrows shown herewith, adapted to dirt, coal, coke and ashes, are offered by the Kentucky Mfg. Company, Covington, Ky. The manufacturers remark that in the construction of tubular steel barrows the best material and skilled labor are employed. It is

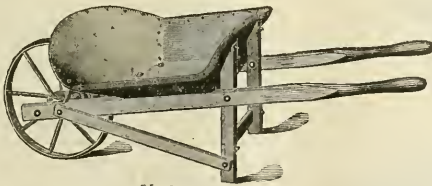


Fig. 1.—Dirt or Canal Barrow.

explained that the trays are made in a substantial manner, with a band of iron securely riveted around the top part, and that the corners are made double where the greatest strength is required. The Howell suspension steel wheel is

steel cross bars are so constructed that the tray can be easily adjusted in a workmanlike manner, thus making light, strong and durable barrows.

MEMORANDA.

SILVER & Co., 304-314 Hewes street, Brooklyn, N. Y., are paying very close

attention to the development of new goods in aluminum this season. They have now increased their line of Brooklyn pure aluminum specialties

to about 30 articles, and propose to extend their efforts in this direction still further. Messrs. Silver report a very gratifying growth in the demand for aluminum household ware as its merits become more generally appre-

THE FIRM of White & Porter, Bristol, Conn., dissolved on January 14, Mr. White continuing at the old stand, while Mr. Porter, with his son, under the title of J. M. Porter & Son, will open a stove, furnace, tin and plumbing store on Main street.

THE MICA MFG. COMPANY will, on and after February 1, be located at 88

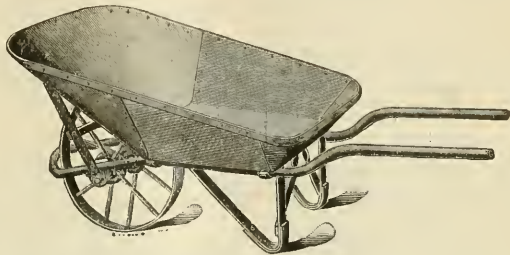


Fig. 3.—Coke or Ash Barrow.

Fulton street, New York City. An illustrated catalogue, published by this firm, contains cuts of a very great variety of mica goods which they manufacture and sell. These include all sorts of canopies for gas and lamps, beades shade protectors, chimneys, screens, &c.

THE LAWRENCE & McDOWELL COMPANY of Moira, Franklin County, New York, have been incorporated with a capital of \$10,000 to manufacture tinware and do a general plumbing and hardware business. Directors: W. A. Lawrence, Helena Lawrence and David A. McDowell of Moira.

NORTH BROS. MFG. COMPANY, Philadelphia, Pa., John H. Graham & Co., 113 Chambers street, New York, agents, issue an 1895 catalogue devoted to Ice Cream Freezers, Ice Chippers, Freezer Clamps, Ice Shaves, Meat Cutters, Scales, Beaters, Cake Pans, Cake and Batter Mixer, Candlesticks, Fluting Machines, Hand Fluters, Wringers, Tobacco Cutters, Tobacco Shaves, Faucets, Christmas Tree Holder, &c. The company call attention to the advance in the list prices of original Knox Fluters to the same list as Crown Fluters, and to the revision of the list prices of repairs for Ice Cream Freezer and Fluting Machine repairs.

THE STAR MFG. COMPANY, established two years ago at Canton, Ohio, manufacturers of the Crystal Valve Oil Can, have concluded arrangements by which they become successors to the F. B. Smith Novelty Company, and will in the future manufacture the Smith Novelty Force Pump, brass and aluminum kitchen ware and advertising novelties. They will occupy the premises formerly used by the F. B. Smith Novelty Company, at East Fourth street, which are furnished with facilities for manufacturing a full line of hardware specialties. At the annual election, held January 25, the following officers and Executive Board were chosen: President, J. A.

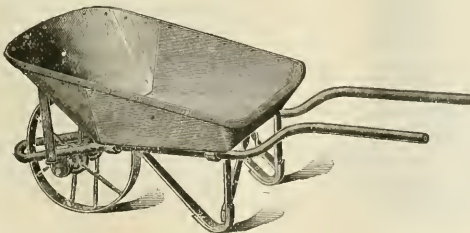


Fig. 2.—Coal Barrow.

used on all the company's barrows. In addition to the barrows shown the company make tubular steel barrows adapted to dirt, canals, mining, foundries, rolling mills and pig iron. It is stated that the tubular frames with

clated. In order to provide adequate facilities for their growing business in aluminum goods, the firm propose making some important additions to and improvements in their factory at an early date.

Brobat; vice president, F. H. Wagner; secretary and treasurer, Frank Schwerter; superintendent, J. Kauer. C. C. Bow is also a member of the Executive Board.

THE BOWEN MFG. COMPANY, Fond du Lac, Wis., have made a change in the exterior ornamentation of their refrigerators. They have introduced more elaborate carving on the door panels, inserted the name of the refrigerator on the ice chamber panel, with appropriate scroll work, and added bolder designs on frieze and skirting, with the result of greatly improving the appearance of these goods.

New Favorite Postal Balance.

John Chatillon & Sons, 85 93 Cliff street, New York, have brought out the New Favorite postal balance as here illustrated. The body is made of sheet steel, japanned and decorated in gold and other colors. A white dial with distinct large black figures is protected by a glass front in a brass nickle-plated frame. It will be noticed the figures, which are $\frac{1}{4}$ inch long, are not inverted in the lower section, to conform to the circle, but so placed as to be correctly read at a glance. The outer circle of figures indicate the postage in cents for first class or sealed matter, as letters, &c., in multiples and fractions of weights. The same principle applies to the remaining circles of numerals on merchandise, books, &c., and papers, all showing the postage for the different classes or sub-divisions to any part of the United States, Canada or Mexico. The inner circle is graduated to the capacity of the scale by

of the scale is at once strong, light and attractive. The outside dimensions are: Height, 10 inches; depth, $7\frac{1}{2}$ inches, and dial, 7 inches. It is numbered 026 L, and each scale is packed

special reference to lightness and convenience. These tools, it is claimed, will work in any direction, and are put out as examples of neatness and lightness combined with necessary strength

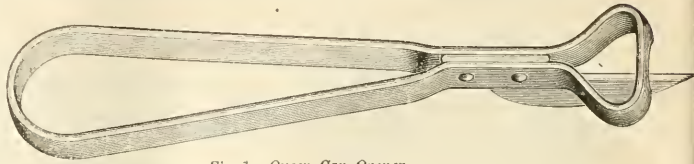


Fig. 1.—Queen Can Opener.

separately in a dovetailed wood box with slide cover.

New Can Openers.

The Brown & Dowd Mfg. Company, Meriden, Conn., have just brought out a new can opener, which will be put on the market under the name Queen, and a new combination can opener and cork-

screw, as will be noticed, when not in use may be shut into the handle, and when in that position does not in the least interfere with the use of the can opener. The King is finished in nickel plate and the Queen japanned.

Representative Childs of Illinois introduced into the House last week a bill

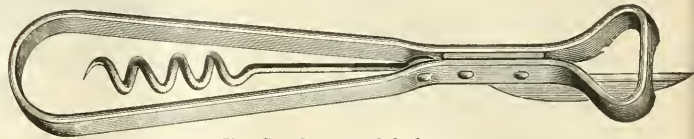
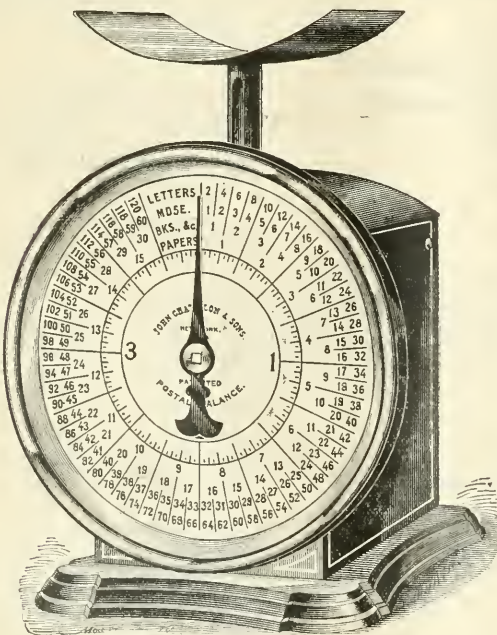


Fig. 2.—King Can Opener and Corkscrew.

screw, which will be known as the King. They are represented in the illustrations given herewith. These tools

to incorporate the National Central Railway Company, a corporation to be empowered to lay out and equip a railway from a point on the Hudson River, or from some point in New York City to some point in San Francisco. The project is an immense one, involving an outlay of some \$400,000,000. A preamble to the bill says that it is declared to be one of the fundamental duties of the Government to provide for common defense and promote the general welfare of its people, and that such defense and welfare can be subserved by connecting the two great centers of population upon the Atlantic and Pacific coasts by the shortest available line for the transportation of Government troops, the United States mails, the people and their commerce. The present route can be reduced in distance by 600 or 700 miles.



New Favorite Postal Balance.

$\frac{1}{4}$ ounces to 4 pounds avoirdupois. The pan at the top is nickle-plated brass. The adjustment of the pointer is made by a thumb screw on the top of the scale. The material used in the construction

are described as struck from a single piece of steel, to which a blade of cast steel, tempered, is securely riveted, and in the combination tool the corkscrew is tempered steel wire and is made with

The ninth annual report of the New York State Factory Inspector, submitted to the Legislature on Monday, recommends, among other things, that eight hours be made the limit of a day's work for women and for children under 16 years of age in factories and mercantile establishments. Legislation is urged regulating the erection of fire escapes on hotels and also for the means of egress and sanitary arrangements in halls, theaters, &c. The report also recommends that inspectors of steam boilers and examiners of stationary engines be appointed with suitable powers.

During the year recently closed, 64 West Australian enterprises, with an aggregate capitalization of \$17,600,000, were placed on the London and Scottish markets, the majority during the past three months of the year. Mining and land companies are the main industries for which the support of British capitalists is desired.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

THE EXETER MACHINE WORKS, Boston, Mass., have recently shipped five Exeter sectional steam boilers to Chicago for heating five apartment houses owned by Burley & Co.

THE SCHOOL COMMITTEE of Amherst, Mass., will receive bids for heating and ventilating the High School Building. These bids must be based upon the mechanical and gravity systems and must be in the hands of the chairman by Saturday, February 23.

SHAPLEY & WELLS, Binghamton, N. Y., have secured the contract to ventilate the court room, at \$1585.

J. G. MAHONEY, Spring Valley, N. Y., has the contract for the tinning and plumbing on the house being erected for Edward Earl.

FRANK E. GODDARD is building a residence at Hartford, Conn., that will have a plumbing system and a hot water heating plant.

DISLEY & WEYAND, Waterbury, Conn., have the contract for the plumbing in three stores and tenements to be erected by H. Zehnder.

WALLER & CAREY are finishing up their contract on E. C. Stoughton's new house in Thomaston, having put in a Winchester heater. The firm have recently moved to 172 East Main street, Waterbury, Conn.

E. A. LETTNEY, Crown street, New Haven, Conn., has taken the plumbing of a house for W. H. Lettney; also a house on Howard avenue, one on Wallace street, West Haven, and the tinning of W. H. Brown's house.

J. VREELAND of Congress avenue, New Haven, Conn., is doing the plumbing in Thos. R. Trowbridge's new double house on Portsea street, besides one on Hurlburt street and one in Allingtown.

THE HEATING APPARATUS in the Hospital for Contagious Diseases, at Detroit, Mich., is to be replaced by a new one.

THE BUILDING COMMITTEE of the Board of Control, Scranton, Pa., awarded the contract for heating and ventilating the new High School to Hunt & Connell for \$29,478. The lowest bid was that of Gaylor & Eitapeone of Binghamton for \$28,937. The disposition to spend the citizens' money at home for the benefit of local workmen influenced the award. The heating system was designed by Fred. P. Smith, the New York heating and ventilating engineer.

M. J. REDMOND & Co., Wallingford, Conn., have been awarded the contract for fitting up the Masonic Home with heating apparatus.

E. W. NOYES of Brockton, Mass., has the plumbing contract for Joseph Pratt's house at Onset.

TWO SCHOOL BUILDINGS are to be erected at DuBois, Pa., for which the heating contracts have been given to the Peck-Williamson Company, Cincinnati, Ohio.

GEO. J. EOGLE & LaCrosse, Wis., has received the contract for doing the plumbing in Andrew Hanson's new building.

THE CORTLAND CITY HOSPITAL ASSOCIATION took possession of their property, 86 North Main street, Cortland,

N. Y., and will move in as soon as some necessary repairs can be made. Plans will soon be perfected to heat the building by steam.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until February 19, for the plumbing of the United States Court House and Post Office Building at New York City. Drawings and specifications may be obtained from the Supervising Architect at Washington, or at the office of the superintendent at New York.

THE FULLER & WARREN COMPANY, 147-149 Lake street, Chicago, are to place two warm air furnaces in the flat building of C. J. Colburn, Lawndale, Ill.

M. L. MANDABLE, 258 Clark street, Chicago, has the contract for the plumbing, gas fitting and sewerage in the residence of Judge Stein, Grand boulevard and Forty-fourth street.

THE JOHN DAVIS COMPANY, 69-79 Michigan street, Chicago, are to install a steam heating plant in the school building at Fulton street and California avenue.

THE CHARLES H. SIMMONS COMPANY, 72 Market street, Chicago, are to install hot water heating plants in the residences of Dr. Jared Bassett and Prof. Robert D. Sheppard, Evanston, Ill.

COOK & CHICK, 253-255 Kinzie street, Chicago, have the contract for steam heating in the two four-story apartment buildings of T. E. O'Brien, Prairie avenue and Forty-seventh street.

THE FULLER & WARREN COMPANY, 147-149 Lake street, Chicago, have contracts for warm air heating in the residences of J. L. Cochran, Edgewater, and John E. Cowles, Hyde Park.

JACOB G. WEBER, 244 North Clark street, Chicago, has the contract for the plumbing, gas fitting and sewerage in the three-story flat buildings of H. Schmiedtgen, Elm and Sedgwick streets.

FRANK J. RUH, 1204 Diversey street, Chicago, has contracts for the plumbing, gas fitting and sewerage in the following residences: Dr. Groynce, Halsted street and Evanston avenue; A. Gurner, Jefferson and Huntington avenues; T. Meyer, Edgewater.

SEALED PROPOSALS will be received until January 22 for heating and ventilating the Court House at Racine, Wis. Blue prints of the building will be furnished on application. Proposals are to be sent to John Dixon, County Clerk, Racine, Wis.

JOSEPH B. BREEN, 368 West Van Buren street, Chicago, has just finished a bathroom costing \$750 in the residence of M. W. Ryan, Throop and Adams streets. He is also doing the plumbing, gas fitting and sewerage in the flat building of A. J. Cronin, Prairie avenue and Forty-fourth street.

M. L. MANDABLE, 258 Clark street, Chicago, is doing the plumbing, gas fitting and sewerage in the ten flat building of Mrs. Vincent, Grand boulevard and Forty-third street.

J. P. ADAMSON, St. Paul, Minn., was awarded the contract for the plumbing in the Dale Street Infirmary.

BAKER, SMITH & Co., New York, have placed an order with the American Radiator Company for 625 radiators of the National pattern, which will be used in the Presbyterian Building at

Fifth avenue and Twentieth street, New York, for which they have the heating contract.

THE PEOPLE of Millville, N. J., have inspected the heating plant in their new school and are much pleased with the results of testing it. It was designed by L. W. Gould of Vineland and installed by Alfred Brandriff, using large size Magee Combination heaters.

THE HAMSLEY METAL ROOFING COMPANY, 18 Cliff street, New York, are doing the sheet iron work and setting three large Sturtevant blowers for the exhaust ventilation of a factory in Brooklyn.

HUGH WATT, 339 Dearborn street, Chicago, is remodeling the plumbing in the residence of William Kent, 3616 Grand boulevard.

C. & R. SCHWEITZER, 187 Centre street, Chicago, are remodeling the plumbing in the flat building at 3608 Vernon avenue.

D. D. DEWAR & Co., 335 S'xty-third street, Chicago, have the contract for plumbing, gas fitting and sewerage in the two residences of Joseph Cormack, 680-682 Vernon avenue.

KROESCHELL BROS. COMPANY, 41 59 Erie street, Chicago, have the contract for steam heating in the flat building of J. J. Kane, 195 North Clark street, and residence of F. P. Kenkel, Wilmette, Ill.

METZ BROS., 107 Twenty-second street, Chicago, have the contract for steam heating in the residence of C. H. Platt, 3300 Wabash avenue.

JAMES J. WALSH, 78 Thirty-first street, Chicago, is finishing the plumbing in the eight-flat building of Judge Pendergast, Pearson and Cass streets.

J. HALL, 3723 Cottage Grove avenue, Chicago, is to do the plumbing, gas fitting and sewerage in the two store buildings at 3757-3759 same street.

BARR & CREEDON, Starkey, N. Y., have completed their contract for heating Starkey Seminary by steam, and the work is accepted by the trustees.

LOCK BROS., Williamstown, Mass., have the contract for the plumbing of the new Danforth Block.

THOMAS OAKES, Hartford, Conn., has just closed a contract for 16 Page hot water boilers and 3500 feet of radiators. He is doing the plumbing and gas fitting in a house of six tenements for Robert Allyn and is doing the plumbing, using the goods of the J. L. Mott Iron Works, in the residence of C. C. Beach.

THE BOARD OF EDUCATION for the State of Connecticut will receive proposals for a heating and ventilating apparatus for a Normal Training School Building now being erected in New Haven. These proposals will be according to plans and specifications, to be seen at the office of the Board in Hartford, also at the office of Hartwell and Richardson, architects, 62 Devonshire street, Boston. Proposals must be delivered at the office of the Board in Hartford not later than February 18, 1895.

A report submitted by the Senate Committee on Pacific railroads favors a long time extension of the Union Pacific's debt to the Government, arguing that absolute foreclosure and sale would involve a clear loss of \$50,000,000. Federal operation of the road is not regarded as desirable.

STOVE TRADE NOTES.

Cupola Tuyeres.*—IV.

BY DR. EDWARD KIRK.

Bottom Tuyere.

In Fig. 17 is seen the bottom or center blast tuyere. This tuyere, as will be observed, passes up through the bottom of the cupola instead of through the sides, and admits the blast to the center of the cupola at the same level as the side tuyeres. It is not designed to change the nature of the iron by forcing the blast through the molten iron in the bottom of the cupola, and, in fact, the blast has no more effect upon the quality of iron when admitted in this way than when admitted through side tuyeres. A tuyere when placed in the bottom of a cupola, unlike a side tuyere, is brought in direct contact with heated fuel and molten iron, and it must be made of a refractory material or protected by a refractory material if made

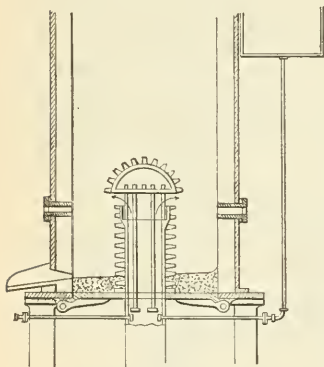


Fig. 17.—Bottom Tuyere.

of metal. The tuyere shown in the cut is made of cast iron and is provided with a water space between the out and in side, through which a stream of water constantly flows when the tuyere is in use from a small pipe connected with a tank placed alongside the cupola or on the scaffold. But it has not been found necessary to keep the tuyere cool with water in short heats, for the heat in a cupola under the tuyeres is not sufficiently intense to melt cast iron, and the tuyere may be sufficiently protected against molten iron dropping upon it or coming in contact with it by a thick daubing of refractory material held in place by the pricklers cast on the tuyere. The mouth of a bottom tuyere must be covered to prevent molten iron, slag and fuel dropping into it in its descent to the bottom of the cupola. This is done with a rounded cap placed on top of the tuyere to throw off the molten iron and slag and the blast is admitted to the cupola through an opening around the tuyere under the cap, as indicated by

the arrows. The tuyere must be carefully daubed and dried before it is put in place. It cannot be attached to the bottom doors and must be put in place through a hole in the doors after they are put up and withdrawn in the same way and removed before the cupola is dumped to prevent it being broken or injured in falling or by the heat in the dump. It must have an adjustable and removable support and the sand bottom must be made up very carefully around it to prevent leakage of molten iron. The tuyere often gets fast in the bottom and the men are frequently burned in removing it, and it sometimes gets filled with iron or slag and spoils a heat.

The bottom tuyere has been tried a great many times by foundrymen at different periods, and is nothing new. In conversing with several old foundrymen in Massachusetts about 17 years ago I learned that the bottom tuyere had been used in that State away back in the '40's, and at one time was quite popular with foundrymen there; and I have met a number of other old foundrymen in different sections of the country who had tried the tuyere years ago and given it up. A bottom tuyere was patented by E. H. Hibler in this country August 13, 1867. Ireland & Voisin used a bottom tuyere in their cupolas many years ago, and had these practical men found any advantages in it over the side tuyere it would, no doubt, have been brought into general use in cupolas before this.

The bottom tuyere was brought prominently before the foundrymen of this country by an ably written article by Thomas D. West, read before the Western Foundrymen's Association at Chicago, Ill., October 18, 1893, in which he describes his experiments with the tuyere and claims for it a great saving in fuel and cupola lining. Since the publication of Mr. West's article a number of foundrymen have published their experience with the tuyere and all claim it effects a great saving in lining and fuel. But if these foundrymen have not discovered some new feature in the tuyere that was overlooked by experimenters with it years ago, it will never come into general use.

Size of Tuyeres.

Foundrymen make a great mistake in placing small tuyeres in their cupolas, with a view of putting the blast into the cupola with greater force and driving it to the center of the cupola with the blower. Air may be driven from a small opening by a blower with greater velocity than the same volume of air from a large opening, but the air from a small opening loses its velocity when it strikes a solid body, just the same as the air from a large opening. When the blast from a small tuyere strikes the solid fuel in front of a tuyere its velocity is gone and it will not penetrate any further into the stock than the same volume of blast from a large tuyere. It is not the velocity at which the blast passes into a cupola that drives it to the center, but the force behind the blast. Neither is it the velocity of the blast that does the melting. It is the volume of blast. It therefore

follows that nothing is gained in melting by forcing the blast through a small tuyere into a cupola with great velocity, and much is lost by increasing the power required to run the blower to force the blast through a small tuyere.

The small tuyere was one of the greatest mistakes made in the old-fashioned stove cupola. In these cupolas, many of which I have seen, only two tuyeres of 3 or 4 inches diameter were placed in a 30-inch cupola and the improvement made in melting in the modern cupola is largely due to the enlargement of the tuyeres and the free admission of blast to the cupola.

The combined tuyere area of a cupola should be equal to three times the area of the outlet of the blower when the blower is of a proper size for the cupola. These dimensions may seem large at first sight, but it must be remembered that the size or area of a tuyere when a cupola is not in blast does not represent the area of the tuyere when the cupola is in blast or the volume of blast that may be admitted to the cupola by the tuyere. When a cupola is in blast the space in front of the tuyere is filled with fuel weighted down by tons of iron. This fuel closes the mouth of the tuyere and the outlet is represented by the number of crevices between the pieces of fuel through which the blast may escape. Should a large piece of fuel fall in front of a tuyere the blast cannot remove it and the tuyere may be closed and rendered useless. Small tuyeres are more liable to be closed in this way than large ones, and for this reason small tuyeres should never be placed in a cupola. Small tuyeres, furthermore, are not only more liable to be stopped off by the fuel but also tend to promote bridging by admitting an insufficient amount of blast at certain points.

The A. J. Lindemann & Hoverson Company

of Milwaukee, Wis., have extended their line of gasoline stoves for the coming season. They manufacture Anchor juniors of one, two and three burners; Anchor high juniors, with two and three burners; Anchor step juniors, with two and three burners on top and a double burner in the step; Star juniors, with one, two and three burners; Star high juniors, with two and three burners; Star step juniors, with two and three burners in top and a double burner in the step; Anchor individual burner stoves, with two and three burners in top and one double burner in the step; Anchor single generator stoves, with two and three burners in top and one double burner in the step. They also manufacture the L. & H. process line, which consists of the L. & H. process cabinet with two top cooking holes, two top holes and step, or three top holes and step; also open frame two and three burner stoves without the step. The cabinet stove is a very pretty construction, with a large high shelf, full sized oven and a burner constructed on a wholly new plan. The individual burner and generator stoves are supplied throughout with the

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L. & H. removable safety tank and with double valve burners in all but the cheapest grade. The generator is started without smoke or odor or a flashing fire, all of which is avoided by the use of a small quantity of alcohol to heat the burner, an alcohol receptacle being arranged in a convenient place. In addition to gasoline stoves the company manufacture the L. & H. gas ranges in four styles, small gas stoves and lamp stoves. On all lever valves the words "open" and "closed" are placed, to positively catch the eye of the operator. Further additions to their line of stoves are contemplated by this enterprising company.

The Clark Stove Company.

According to Kansas City papers the recently incorporated Clark Stove Company will be operating a considerable plant for the manufacture of steel ranges by April 1. A plot 150 x 300 feet in dimensions alongside the plant of the Armourdale Foundry Company, southeast corner Kansas avenue and Adams street, Armourdale, will be occupied by the buildings of the new factory. Ground will be broken at once for three brick structures—a foundry 55 x 128 feet, a two-story mounting room 55 x 60 feet and a two-story storage and office building also 55 x 60 feet. The capacity of the plant will be 40 steel ranges per day.

The new enterprise is incorporated by R. M. Clark, A. M. Clark, O. A. Clark, R. A. Clark and H. N. B. Umbach, with \$100,000 capital, of which \$50,000 is paid in. R. M. Clark is president and H. N. B. Umbach is secretary and treasurer. The Kansas City office and store is at 704 Main street. Fifty thousand dollars in 7 per cent. interest bearing preferred stock will be sold. The buildings will cost \$20,000. The new and original machinery will represent at least a like sum.

R. M. Clark, the originator of the enterprise, is from Madison, Wis., and latterly from McPherson, Kan., where he conducted a large stove business. He is a well-known mechanic and is the inventor of the three-wheel plow which is now universally used. After several years of inventive labor he has perfected the Clark steel range, which, it is stated, may be used with coal or gasoline. It has been made by contract in Kansas City for some little time, and the success of its sale has interested Robert Gillham and Gus P. Marty, proprietors of the Armourdale Foundry, in its manufacture and promotion on a large scale. They are so sure of the worth of the invention, and have such faith in Kansas City as a good point for manufacture and distribution, that they have contracted to erect the necessary buildings upon their ground and accept a rental from the stove company. The facilities of the plant will be modern in every respect. The machinery includes labor saving devices which will greatly cheapen the production.

HOWARD M. CARY, Boston agent for Sam S. Utter, died January 28, aged 58 years. Mr. Cary was well known throughout the New England trade as a man of sterling business integrity and enjoyed the respect of a wide circle of friends. We understand that the Boston agency will for the present be discontinued and that it is the wish of Mr. Utter that deslers forward their orders direct to 113 Beekman street, New York City.

ODD PLATES.

THE CLEVELAND FOUNDRY COMPANY of Cleveland, Ohio, and with branches in Boston, New York, Chicago and San Francisco, have just issued an attractive catalogue of 68 pages, relating to their leading specialties. Within the paper covers of the publication are found illustrations of many new goods not contained in last year's edition. The company announce that they are preparing still other lines of goods, both for oil and for gas, circulars relating to which will be distributed from time to time as the productions are ready for the market. In their announcement to the trade they refer to the fire on October 10 of last year which destroyed the greater portion of their works, and while this was a serious loss, the reconstruction has given the company the opportunity to enlarge and rearrange the buildings in such a way as to greatly increase their facilities and enable them to handle orders more promptly than ever before. The catalogue before us is taken up with illustrations of the Puritan oil and gas heating and cooking stoves, which are offered in great variety, and which embody in their construction features which have established for them a gratifying reputation. Attention is given to ovens, broilers, registers, ventilators, sad irons, floor borders, &c., as well as gas radiators, drums, &c. The catalogue is neatly printed and is bound in attractive paper covers.

WHITE, WARNER & CO., Taunton, Mass., manufacturers of the well-known Household lines of ranges and stoves, are sending to their customers a very handsome piece of cardboard standing 15 inches high and representing a lyre, the frame of which is decorated with 12 variously colored roses of different varieties. Behind each of these is a calendar, there being one for each month in the year. The calendar is arranged to either hang or stand.

THE BUSSEY & McLEOD STOVE COMPANY of Troy, N. Y., resumed operations at their plant January 24. They now employ a force consisting of 150 men. It is their intention to increase the number in the near future.

THE STOVE MOLDERS of Albany, N. Y., have been uneasy for some time past and have held several meetings to discuss the situation. They are complaining of the long shut down of stove foundries in that city, and that with no work they are still obliged to pay their dues to their national organization. Committees were appointed to wait upon the management of one or two of the stove foundries and present the grievances concerning the extended idleness. As the foundries are resuming as rapidly as the condition of business affairs warrants, no trouble is anticipated, and everything will probably be amicably arranged by the employment of the old forces of molders.

C. B. SMYTHE and W. F. HABICHT, representing F. M. Borden & Bro., Philadelphia, are visiting the trade in the interests of gasoline and gas stoves and refrigerators, and are sending in with their orders for immediate shipment long lists of stove repairs, of which the house make a specialty. They are also showing photographs of the Novelty and Leaf lines of stoves and ranges.

AT THEIR ANNUAL MEETING, recently held in St. Louis, the Buck's Stove & Range Company elected the following officers: F. F. Palms, president; G. H.

Barbour, vice-president; J. W. Van Cleave, treasurer and general manager; H. C. Thompson, secretary; F. F. Palms, G. H. Barbour, J. W. Van Cleave, Jeremiah Dwyer and F. W. Gardner, directors.

THE RINGEN STOVE COMPANY, 414 North Broadway, St. Louis, Mo., favor us with a copy of their 1895 catalogue relating to Quick Meal gasoline stoves. It is made up of 30 pages, printed in blue-black ink on a good quality of paper and bound in the same style of paper covers which has characterized the annual publications of this company for several years past. The opening pages are devoted to a new line of Quick Meal ranges of the evaporating style and embodying the latest improvements. Numerous varieties are shown running from the two-burner construction designed for the use of a small family up to the three-burner and step range having oven, warming closet and steel base, adapted for hotel and restaurant use. One of the varieties of this stove is shown in the catalogue in connection with a canopy. Other pages are given up to Quick Meal ovens, saucepans, plumbers' furnaces, paint burners, torches, waffle irons, cans, burners, &c. One of the leading features is a page showing the Quick Meal tank for 1895, and the construction of the Quick Meal balance door.

THE TOLEDO STOVE WORKS, located at Auburndale, Ohio, were recently damaged to a slight extent by a fire which originated in the molding room. The loss was fully covered by insurance.

THE GREAT WESTERN STOVE & MFG. COMPANY of Leavenworth, Kan., expected at the date of latest advices to resume operations on Friday, February 1, with a full force.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, have found it necessary to enlarge their manufacturing facilities in order to handle their rapidly increasing business. They have just awarded contracts for an addition to their present plant which will give a frontage of 400 feet and a depth of 150 feet, the building being three stories high. This new space will be largely devoted to the manufacture of gas stoves and when the improvements are completed the company state they will have the largest gasoline and gas stove factory in the world.

THE BELLEVILLE STOVE COMPANY of Belleville, Ill., have recently elected the following Board of Directors: Charles Becker, Joseph Fuess, George A. Rehman, Frederick Sattler and J. J. Weingaertner.

THE MOLDING DEPARTMENT of the Weir Stove Company, Taunton, Mass., resumed operations on Wednesday, January 23, and the other departments resumed on the day following.

AT A RECENT MEETING of the stockholders of the Western Stove Mfg. Company of St. Louis, Mo., the following directors were elected: Joseph T. Dugdale, Lucas Edel, J. H. Woltering, B. H. Sanders, H. F. Lucey, Antone Werbach, George Reiners, Wm. T. Dugdale and John M. Schurman. At a subsequent meeting of the Board of Directors Joseph T. Dugdale was elected president and Lucas Edel secretary and treasurer.

F. M. BORDEN & BRO., Philadelphia, Pa., are sending out three new gasoline stove catalogues. One is in a mottled

blue cover, with the title embossed in gilt, and is devoted to the New Process vapor stoves. The text is in two colors on fine paper, with half tone engravings of the various styles of the New Process stoves in cabinet, semi cabinet and steel frame finish. The Reflex oven is shown as a specialty, one view representing it "knocked down" for shipping, when it occupies but little space. Sectional views are given of the valve and of the burner drum. The remaining pages are devoted to cooking utensils and instructions, with cuts for ordering repairs. Another catalogue is in a buff cover, devoted to the Splendid Novelty generating vapor stove, the text being printed in a dark green ink. Cuts show the stove in several forms, and several pages are occupied with sad iron heaters, toasters, broilers, ovens and cooking utensils. The Globe Junior gasoline stoves are shown in a catalogue printed in blue, and nothing is omitted in the text or pictures to bring the attractions of this line before the trade. Prospective purchasers will find these catalogues an aid in selecting their line of gasoline goods. Attention is also called to the company's line of coal cooks, gas stoves and refrigerators.

GEORGE M. CLARK & Co., with office and factory at 149-161 Superior street, Chicago, Ill., issue an attractive catalogue of Jewel gasoline stoves for the season of 1895. In general shape and size the publication corresponds with those issued in previous years by this enterprising concern, and dealers will find within its attractive paper covers much to interest them. In their greeting to the trade the company refer to the thousands of dealers who have handled Jewel gasoline stoves, and state that 13 years of stove manufacture means with them the ability to furnish repairs for stoves made 13 years ago. Among the new features and improvements incorporated in the process stoves for 1895 are: A new shield that is removable; a clean out slide at the base of the central draft tubes; a lug at each valve outlet in the tank; a wide base bar for all burners; a removable strainer wire, with handle, at the fuel funnel; the tank finished in antique bronze, while the stoves themselves are finished in copper plate decorations instead of nickel plate. The single generator stoves have new high shelves above the top, and there has been added a new 26-inch high stove of the same capacity as the two-burner step stove. In connection with individual burner stoves it is stated that the Jewel-Acme are fitted with a burner that may be turned low without the complication of two needles, and that the Jewel Junior Safety, 24 and 14 inches high, with Jewel burner and cut off, are supplied at the same price as the Jewel-Acme stoves of last year. In the way of stove furniture the company have added new oven racks that run sideways, instead of up and down, and are properly adjusted to hold two layers of bread. The catalogue is profusely illustrated and shows in detail the important parts of the Jewel process stove. In connection with the letterpress there are given the various sizes in which the different stoves are made, together with their prices. Remarks about repairs, an index which gives weights, crate charges, prices and telegraphic code words of Jewel gasoline stoves are some of the other features of the publication.

THE CULTER & PROCTOR STOVE COMPANY of Peoria, Ill., are distributing an illustrated circular showing the new pattern of their Peoria Lexington

six-hole range intended for using coal or wood as a fuel. The design of this stove is exceedingly attractive, and the finish is of a high order of merit. It embodies the latest features of convenience and utility, and is referred to by the manufacturers as a rapid seller. The company are offering the trade 59 styles and sizes of Peoria-Lexington cook stoves and ranges.

"THE EVANS PURE AIR FURNACE" is the title of a 30 page pamphlet of convenient size, which reaches us from Charles A. Evans, proprietor of the Evans Furnace Works, Thirteenth street, above Buttonwood, Philadelphia, Pa. The heater named is described at considerable length, while illustrations show the general appearance of the apparatus as well as the internal arrangement of parts. The little pamphlet tells what the furnace does and how it does it in a way to interest the trade. Nearly one-half of the pages are taken up with testimonial letters from some of those who have used the Evans heaters.

THE TROY NICKEL WORKS, Troy, N. Y., ask us to inform the trade that their crop of dime and pins has run out for 1895 and that those who have been so unfortunate as not to get one will be remembered in their next.

THE ELLWOOD GAS STOVE & STAMPING COMPANY of Ellwood City, Pa., favor us with copies of two attractive pamphlets which they have issued relating to their specialties for the season of 1895. The larger of the two publications consists of 16 pages neatly printed, profusely illustrated and bound in attractive paper covers. Special attention is directed to the company's line of single generators which are furnished with the Ellwood safety tank, as well as the low-down tank. The Ellwood junior gasoline stoves are constructed with tops, legs and bands of stamped steel while the bodies are japanned and neatly ornamented. They are fitted with the company's No. 2 individual burners which are operated with nickel wheel blunt valve, so that the flames can be turned low without being extinguished. The needle valve is the special feature of the burner, and is easily operated with one quarter turn. The second pamphlet relates to the Ellwood gas heaters and radiators which are shown in extensive variety. Brief, descriptive particulars are presented in connection with each illustration and the general arrangement is such as to interest the trade.

THE MANY FRIENDS OF D. M. Thomas, secretary of the National Association of Stove Manufacturers, will regret to learn of his continued serious illness. The improvement noted in his condition in our issue for December 29 was of short duration, and he was unable to carry out the recommendations of his physicians regarding a trip to Bermuda.

A NEW TRIAL was granted by the Michigan Supreme Court on January 22 of the condemnation suit of the Fort Street Union Depot Company against the Peninsular Stove Company of Detroit. The trial of this case occupied about two months' time of the Wayne Circuit Court and resulted in a verdict in favor of the stove company for \$49,500. This amount represented the damages which the stove company would receive by the construction of the viaduct along River street, adjacent to the stove factory. It was contended that the passing of the locomotives and cars by the aide of the stove works would jar the molds and

cause great and irreparable damage to the company.

THE ARHAM COX STOVE COMPANY and the Model Heating Company have removed to 52 Dearborn street, Chicago, where they occupy a fine suite of rooms on the second floor. The building has just been rebuilt and modernized throughout, having all conveniences of a first-class office building, including elevator service. The rooms occupied comprise, first, a large sample room and general business office; second, a furnace room, in which furnace parts are shown so as to thoroughly explain the warm air apparatus; next, a special office for the manager, in which steam and hot water boilers are shown in sections, so that their construction can be explained; and last, a private room for drafting, or special work. Thus the new quarters provide much more room and far greater facilities for the dispatch of business than previously possessed. A further advantage is gained in the closer proximity to the center of the steam, hot water and furnace district. The warehouse will from necessity be separated from the offices, but will not be far away. The local management of these companies continues in the hands of Edward P. Mott, under whose able supervision their Western trade has steadily expanded. They do no contract work whatever, but furnish office room to John J. Shear and John M. Hansen, engineers and contractors for hot water and steam heating, and to Harcourt Mott, who installs warm air furnaces.

THE PENINSULAR STOVE COMPANY of Detroit and Chicago are showing remarkable enterprise for the times. In the first place, they are bringing out a new full line of steel ranges. They have done so well in this branch of trade that their success has stimulated them to greater exertions. Their steel range plant has been so thoroughly equipped that the claim is now made that it is among the foremost in the country. The company are also bringing out a four-hole medium priced wood range, to be named Bronze Peninsular; a six-hole medium priced wood range, to be named Silver Peninsular; a complete line of six-hole first-class coal ranges, to be named Domestic Peninsular; a line of four-hole medium priced coal ranges, to be named Onyx Peninsular and a line of six-hole medium priced coal ranges, to be named Granite Peninsular. Some addition is also to be made to the line of Welcome Peninsular wood cooks. Manager Edward C. Harahan of the Chicago branch, at 79 Wabash avenue, expresses much confidence that the company's enterprise will be appreciated by the trade.

THE J. L. MOTT IRON WORKS, Beekman and Cliff streets, New York, are putting on the market a new range in one size, 7-inch, which is called the Claremont. It is made with right or left oven 11 x 16 x 17 inches in size and is furnished with low closet and water back. The top is of the French style and the range presents several interesting constructive features.

ALBERT N. PARLIN, treasurer of the Magee Furnace Company, visited John M. Sweeney at the New York house at 242 Water street last Tuesday previous to sailing on the "Fuerst Bismarck" for a visit to the Mediterranean and the Orient. He will stop at some of the large European cities on his return, reaching home in April.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, are run-

ning their foundry on full time on the Thatcher furnaces and ranges and Champion steam and hot water heaters. They have recently completed a new cupola of double the capacity of the one formerly used. The cupola is located in a new brick building that is provided with a steam elevator for lifting the coal and iron. The company state that their goods have given general satisfaction and their trade is increasing.

AN UNINTENTIONAL ERROR was made last week in stating that the Cole Mfg. Company had incorporated at Omaha, Neb. This is not the case, The Cole Mfg. Company are incorporated, with a capital stock of \$100,000, in the city of Council Bluffs, Iowa, under the laws of the State of Iowa and not Nebraska, and they are doing business in the city of Council Bluffs, Iowa, manufacturing Cole's air tight wood heater and tank heater, and jobbing bicycles and stoves.

THE PERRY STOVE COMPANY, 242 Water street, New York, are showing a line of Argand high junior gasoline stoves. One of the features is a step burner that may be folded against the frame when not in use.

The Western Stove & Mfg. Company,

60 to 70 Third street, Milwaukee, Wis., report an excellent start in trade for a new company, having sold a large number of stoves for delivery the coming season. They have a well equipped factory, in which they have placed the most approved machinery under the direction of experts in this line. Special care is taken in the construction of stove parts. The needle valves are made with great exactness, and all burners are bored from the solid instead of being cored castings, thus avoiding the possibility of sand holes. All parts of the frames, including tops and bottoms, are made in this factory. The frames are made exceptionally strong, while the tops are considerably wider than usual, so as to provide plenty of room to hold cooking utensils. The mounting and finishing shop occupies a separate story of the building. Here all stoves are tested for an hour before being sent out or stored. The same method is pursued even with the cheapest grades. The company make a special cap for their burner which intensifies the flame, as shown by tests made with this and ordinary burners. The output of the works is gradually increasing, and in a short time the company hope to be turning out 200 stoves daily. They have recently appointed Reeves & Smiley, 44 North Fourth street, Philadelphia, their sales agents for Western Pennsylvania, Western and Southern New Jersey, Delaware and Maryland.

The British *Naval and Military Record* reports that as a result of a series of experiments recently carried out by the Ordnance Committee at Portsmouth, the Admiralty have decided to introduce into the British navy a new type of shell for use with all breech loading guns, from the 16½-inch 110-ton down to the 6-inch 5-ton gun, and also for the 6-inch quick firing gun. The new projectile will be made of cast steel and will have a pointed head. Hitherto the bursting charge of the common shell used for all the larger types of breech loading and quick firing guns has received its detonation by means of

a fuse fitted into the head of the projectile. This arrangement seriously interfered with the penetrative power of the shell, and it is principally for the purpose of giving greater facilities for penetration that the pointed heads are to be adopted. The base of the projectile, which has hitherto been used exclusively for filling with the bursting charge, will now also be arranged for the reception of a fuse. The projectile for the 16.25-inch gun will, when empty, weigh over 1600 pounds, and will be made to receive a bursting charge of about 200 pounds of gunpowder.

Trade Notes.

THE STOWE MFG. COMPANY, Binghamton, N. Y., issue their No. 5 Catalogue of the Stowe Flexible Shaft, of which they are the inventors and manufacturers. The first page of the catalogue proper presents a portrait of N. Stowe, the president of the company. The shaft is illustrated in all its various forms and a description of its advantages is presented. It has a very extensive application, as shown by the illustrations in the catalogue. All the attachments and appliances connected with the shaft are likewise noted.

McCLURE & Co., 62 Second avenue, Pittsburgh, Pa., in an announcement refer to their guaranteed brands of roofing tin which include McClure's Redipped, McClure's Hand Coated and O B T Extra Coated.

THE KIRCKEPPER BROTHERS COMPANY of Milwaukee, Wis., deny the report that they are about to engage in the manufacture of Enamelled Ware. It had been stated that they proposed to equip a large factory for this special purpose.

THE JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J., continue their practice of sending out serviceable monthly blotters to the trade. The one for February is appropriately decorated with a medallion of President Washington.

HAMILTON'S BEST REDIPPED AMERICAN ROOFING TIN is the subject of an advertisement elsewhere of John Hamilton, 62-64 Third avenue, Pittsburgh, Pa. The merits of the plate are referred to in the announcement.

Crop figures for last year, published by the Government, indicate that, as compared with 1893, there was an increase of 64,000,000 bushels of wheat and 23,000,000 bushels of oats, but a decrease of 400,000,000 bushels of corn. The latter crop was the lowest recorded for many years. The farm value of the nine most important crops, exclusive of cotton, is broadly estimated at \$1,621,000,000, the figures, as compared with earlier years, being given as follows:

Crops.	1894.	1890.	1880.
Corn.....	\$54,700,000	\$54,400,000	\$69,700,000
Hay.....	458,500,000	408,400,000	371,800,000
Wheat.....	225,900,000	384,700,000	474,300,000
Oats.....	214,900,000	222,000,000	151,200,000
Potatoes.....	91,500,000	81,400,000	81,000,000
Tobacco.....	27,700,000	43,600,000	43,300,000
Barley.....	27,100,000	37,600,000	30,000,000
Rye.....	13,900,000	16,700,000	18,500,000
Buckwheat.	7,000,000	7,600,000	8,400,000

President Ingalls of the Chesapeake & Ohio Railroad announces that after April 1 next that road will relinquish the coal agency business which it has maintained for many years. This decision has given much satisfaction to the Virginia coal operators.

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TRADE REPORT.

The Iron Market.

Pig Iron.—There has been no important improvement during the week in the New York market. Special Bessemer is offering at low figures from the West, \$14 @ \$14.50 being named, according to place of delivery. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.35 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Philadelphia advices indicate that the condition of the market in that district is little changed. At the reduced prices the market is steady, and, while the demand is not large, furnaces appear to keep pretty clear from accumulations. Consumers are stolidly indifferent, however, and take nothing but what they just happen to want, no matter how low the price may be. Sellers understand the situation, and are, therefore, not forcing the market, seeing that it would not increase the volume of business, although it might affect prices, which as a matter of fact are as low as they can be made without going under actual cost. The following quotations fairly represent the market for Philadelphia deliveries, Harrisburg, York and Baltimore being 20¢ to 30¢ less, according to proximity of furnace:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

The most important feature of the Chicago Pig Iron market has been the steady increase in shipments of local iron. Foundries are resuming work very generally and are ordering their iron to be more promptly shipped on contracts closed some time since. The movement is heavy and fully up to that of 18 months back. New business, however, is disappointingly slow; buyers make inquiries and then postpone purchases. A tendency is developing to stiffen prices of Southern Iron on account of the restricted number of concerns now producing. Lake Superior Charcoal is still quiet. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.40 to 10.50
Southern Coke, No. 3.....	9.75 to 10.25
Southern, No. 1, Soft.....	10.25 to 10.50
Southern, No. 2, Soft.....	9.75 to 10.25
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.50 to 16.00
Other Ohio Silvery.....	14.25 to 14.50

Foundry Iron in the Pittsburgh district has not shown any improvement during the week, either in demand or prices, and No. 2 Foundry has sold at the lowest prices ever known. Quotations are given as follows, for cash:

No. 1 Foundry.....	\$10.50 to \$10.65
No. 2 Foundry.....	9.75 to 10.00

Our Cincinnati representative reports that in that market there have been several large sales of 2000 and 3000 ton lots, as well as several sales of 500 to 1000 tons, and, too, there have been a number of small orders aggregating quite a considerable amount. Deliveries extend from one to four months, but one particularly noticeable feature is that the demand is mainly for prompt or early delivery. From a review of the situation it is evident that buyers are purchasing only for current wants. There is no disposition to speculate even to the extent of anticipating probable needs. On the whole melters of iron seem to be carrying very light stock. Stove foundries, Pipe works, rolling mills and general foundries have figured in the ranks of buyers. The number of small orders received seem to indicate more general animation, although there are other features to discourage this belief. At the moment buyers seem to be having the best of the market, but the market is so sensitive that any concerted or prolonged buying movement would cause quick response and a stronger feeling, if not higher prices. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50
Standard Southern Car Wheel.....	15.75 to 16.75
Lake Superior Car Wheel and Malleable.....	14.25 to 14.75

The Pig Iron market in St. Louis is characterized by extreme dullness. Occasionally an order is secured but in most cases the amounts do not average much over 100 to 200 ton lots, for immediate shipment. Prices are firm and are being maintained, as the past month has demonstrated very effectually that sales cannot be increased by shading prices. Nearly all the heavy local consumers of Pig Iron are now running full time and it is expected that they will shortly be in the market, as none of them are carrying very large stocks. No. 2 Foundry continues to be firmly held on the basis of \$7, f.o.b. cars Birmingham. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.25 to \$10.50
Southern Coke, No. 2 Foundry.....	9.75 to 10.00
Southern Coke, No. 3 Foundry.....	9.25 to 9.50
Southern Car Wheel.....	16.25 to 16.75

H. O. CANFIELD, Bridgeport, Conn., issues a catalogue relating to Mechanical Rubber Goods. A specialty is made of Plumbers' Rubber Supplies, and illustrations are given in the catalogue of Basin and Bathtub Plugs, Bibb Washers, Bumpers or Fender Tips, Floor Plate Flange Rings, Glass Gauge and Plunger Rings, Basin and Tub Waste Washers, Solid Valve Disks, Beer Pump Rubber Supplies, Car and Carriage Springs, Pump and Ball Cock Valves, Rubber Pipe Unions, &c. The manufacturer refers to the catalogue as much more complete than any he has heretofore issued.

Metal Market.

Pig Tin.—The lively skrimishing to secure Tin for January delivery, which marked the close of last week and forced the wholesale price up 15¢, came to an end at the beginning of the present week. With the closing out of the January deal the market gradually assumed more normal shape, as far at least as the relative prices are concerned. The sharp fluctuations that have taken place during the past 30 days, chiefly through purely speculative contest, leave sentiment feverish in the extreme. Operations are, therefore, conducted with caution, since it remains to be seen which of the contending factions will come out best in the long run. The movement of wholesale prices this week has again been downward, and the market closes in an unsettled condition. Jobbing business has been moderate and prices during the week irregular. Quotations for small lots at the close, however, ruling at about the same figures as were given last week, namely, 15¢ per lb.

Copper.—The market is wholly unchanged. Merely routine business has been done, the volume of which does not appear to have been more than fair, and neither export nor home trade demand has exceeded commonplace proportions. Still no considerable amount of copper comes out from any quarter, and prices for all descriptions are kept remarkably steady. It is claimed that deliveries the past month have been on a level with the output of the mines, and that the market has substantial basis of strength on the statistical position alone. So far as the retail trade is concerned, consumers are still inclined to adhere to a conservative policy in buying. Small lots of Lake Ingot from store are quoted at 10½¢ per lb.

Sheet Copper.—The demand is only moderate and inquiry hardly up to the average of last week. Small jobbing quantities are sold on a basis of 15¢ per lb, net, with a reduction in the case of larger lots, or where special inducements prevail.

Pig Lead.—Compared with that of a week ago the present condition of the market shows hardly any change. Sellers are not offering with greater freedom nor yielding anything on prices. Buyers adhere to a very conservative policy, purchasing only as well defined wants may dictate. The market generally is quiet, but steady, small lots of American Pig ruling at 3½¢ @ 3½¢ per lb.

Lead Pipe and Sheet.—Dealers report a narrow demand, governed almost exclusively by actual present needs. There seems hardly the least disposition to anticipate wants, and these are very moderate at the present time, owing to the prevailing slackness in the building trades. Prices are moderately firm, according to list, in this section.

Spelter.—There has been no improvement in business or in the demand, but offerings have become more urgent, causing prices to soften. Good brands

of Western may be secured in small lots at 4¢ @ 4½¢ lb.

Antimony.—The market is steady, with a moderate demand. Prices unchanged from last week's quotations.

Nickel.—Quotations remain at about 36¢ @ 42¢, according to quantity of metal involved.

Tin Plates.—In Coke Plates for forward shipment quite a good business has been done during the earlier part of the week, but the buying interest has moderated and the market has relapsed into a condition of extreme dullness, notwithstanding the fact that prices have been marked down to the lowest known. Spot business has been irregular, and in the aggregate smaller than that of last week. Nothing indicates any immediate improvement in this respect, consumers appearing determined to maintain their hand-to-mouth policy in buying, uninfluenced to any appreciable extent by the inducements offered by low prices. Some sales are reported as having been made during the week at exceptionally low prices. A quantity of stock that has been warehoused since before the imposition of the McKinley tariff has recently been auctioned in New York and Philadelphia, fetching phenomenally low prices—in some instances from 50 to 60% below the market value of the Plates at the time they were imported, although they are said to be in excellent condition. The closing down of a number of Welsh works has been followed by the starting up of several large domestic plants under the new compromise wage scale, so that no scarcity of Plates is apprehended.

The following London cable dispatch of January 30 to *The Iron Age* describes the British Tin Plate Market:

The Tin Plate market has been slow and prices are still easier. Business limited mostly to very small lots, some of which were at below previous bottom rates. Quotations f.o.b. Wales are given as follows:

Bessemer Cokes, 1C 14 x 20.....	@ 9/3
Siemens Cokes, 1C 14 x 20.....	@ 9/6
Ternes, 20 x 28.....	18/ @ 23/
Charcoals, 1C 14 x 20.....	10/6 @ 13/

Sheet Iron.—Manufacturers' agents report a very fair business, sufficient to keep the mills supplying this section actively employed. An increasing disposition is noted among consumers to anticipate their requirements, and some good sized orders are being placed for future deliveries. The demand for Black Plates for tinning purposes is referred to as excellent, due to the starting up again of a number of Tin Plate works who buy their plates. Galvanized Sheets are rather quieter. Jobbers' quotations for small lots of No. 27 Common Iron from store are about 2.65¢; and Galvanized rules at 75 and 5% @ 75 and 10% off.

THE ELECTRIC HEAT ALARM COMPANY, 145 High street, Boston, Mass., issue what they entitle their descriptive Catalogue No. 4 of Automatic Fire Alarms, Automatic Journal Bearing Alarms, Hotel Call and Fire Alarm System, Automatic Alarms for Grain Elevators, Coal Bunkers, Warehouses, &c. The catalogue is a neat pamphlet of some 50 pages, bound in red cloth, and gives a full description with illustrations of the various alarms alluded to. With the increasing use of electricity for the purposes indicated alarms of all sorts are becoming generally introduced, and the instruction and diagrams given in this pamphlet will be appreciated by

all who have to do such work. At the end of the catalogue are a number of testimonial letters from those who are using the alarms and are willing to speak of their merits.

Chicago Report.

Scrap.—Cheap scrap is moving quite freely, but high grade scrap is very dull. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton. Per lb
No. 1 Wrought Scrap.....	\$6.50
Machinery Cast.....	5.50
Malleable Cast.....	5.00
Store Plate (free of burnt).....	4.00
Burnt Iron and Grate Bars.....	3.00
Sheet Iron and Hoops.....	2.00
Plow Steel and Breaking	
Stock.....	4.00
No. 2, such as Shovels, Hoes,	
&c.....	3.00
Old Boilers—whole (Iron).....	3.00
“ (Iron)—cut in single	
Sheets and Rings.....	5.00
Old Gas-Pipe and Boiler	
Tubes.....	5.00
Cast Borings.....	3.00
Turnings.....	4.00
Horseshoes.....	7.50
Copper Bottoms.....	6 ¢
Copper Clips and Heavy.....	7 ¢
Heavy Brass.....	6 ¢
Light Brass.....	3 ¢
Pipe Lead.....	3 ¢
Tea Lead.....	2 ¢
Zinc.....	2½ ¢
Rubber.....	4 ¢

Anthracite.—The very cold weather has not increased the demand. The market is also affected by the extremely low price of Soft Coal, which is selling at \$2 per ton retail, owing to a railroad fight. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.30
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8.10	8.35
Sioux City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

THE LATEST CIRCULAR sent out by Frank I. Maule, 328 Chestnut street, Philadelphia, Pa., is one of those curious publications that cannot fail to receive attention. It is a mixture of various colors and various sentiments put together in various ways, and altogether is a striking example of clever advertising. Mr. Maule makes a specialty of preparing commercial literature, as he terms it, which includes advertisements, catalogues, &c., *ad infinitum*.

DANIEL W. RICHARDS and Morton B. Smith, composing the firm of Daniel W. Richards & Co., dealers in Scrap Iron, have dissolved partnership by mutual consent. Mr. Smith has purchased the stock of the late firm and will continue the business at the same offices in the Manhattan Life Building, 64-68 Broadway, New York.

CONDITION OF THE

Hardware Trade.

THERE is a perceptible increase in the volume of business, but the demand is not as yet as regular and steady as might be desirable, a very good mail one day being followed by comparatively light orders the next. It is, however, an encouraging feature that the salesmen who are on the road generally send in hopeful reports. There is also an evident improvement in some lines, as, for example, Wire Nails, which are unquestionably in a better condition than for some time, with a vigorous demand, which tends to give tone to the market. Manufacturers are maintaining prices pretty well, considering the constant effort which is being made to induce lower quotations. There are, of course, many lines in which concessions are still being made, but on the whole manufacturers are indisposed to yield to the pressure, especially as prices are in some instances so demoralized as to approach closely to the cost line. Under the present circumstances it is to be hoped that manufacturers will refrain from unnecessarily slaughtering prices and do what they can to give steadiness and tone to the market.

Advice from Chicago.—January closes with the Shelf Hardware trade less active than when business opened in the early part of the month, yet its condition is regarded as fair, and the volume is certainly greater than that of the corresponding period of 1894. Considerable business is being done in spring goods, such as Wire Screens, Screen Doors, Poultry Netting, Refrigerators and kindred articles, but Builders' Hardware is moving slowly and Shelf goods are only being called for to sort up. Tinware, however, is in excellent demand and orders for this class of merchandise are as large as they have been at any time in the past. Prices continue low on Tinware, and as yet there is little indication of the advance which has for some time been expected. Staple goods are moving in only moderate volume, the extremely low prices now quoted having resulted in stimulating trade very slightly, if at all. Heavy Hardware is in satisfactory shape, the volume of business in January having been considerably larger than that of January last year. The volume is stated by some jobbers to be even larger in dollars and cents, which shows a decided improvement in trade, as prices now are at least 25 per cent. below those of January, 1894. The continued cold weather and abundance of snow have been of much benefit to jobbers by greatly increasing the demand for sleds, supplies and other articles going with them. The season in this respect has been the best for several years.

Notes on Prices.

Wire Nails.—Since our last report there has been a marked improvement in the tone of the Wire Nail market and prices are quotably higher. The improved tone was perceptible first in the West, manufacturers withdrawing the extreme prices which had been current and insisting on somewhat higher figures. Concurrently with this disposition on their part orders began to come in from the trade, a fact which had the effect naturally of giving the market a still better

tone and leading to the naming of slightly higher prices. The market in the East has already sympathized with the condition referred to and all the manufacturers are now naming higher prices than a week ago. The volume of business has been very large and most of the mills are full of orders for some time to come.

Advices from Chicago.—Manufacturers are making very heavy shipments. Authentic information from all the largest concerns selling in this market discloses the fact that the movement now is one of the greatest in the history of the trade. Running far beyond the current output and rapidly depleting stocks, they have been able without concert of action to advance their price until now the bottom price to the largest buyers is \$1, Chicago or Joliet. The advance made by the manufacturers has so far had no effect on the jobbers, who continue to sell at the same low rates which have prevailed here for the past two weeks. They quote carload lots at 95 cents to \$1, f.o.b. cars Joliet, or \$1 to \$1.10 for shipments from stock in Chicago.

Cut Nails.—The Cut Nail market has not in any marked degree shown sympathy with the improved condition in Wire Nails, quotations being substantially as last week. The volume of business has been moderate, though some improvement is reported, and there is perhaps a slightly better tone to the market.

Advices from Chicago.—Manufacturers report a fair trade in Cut Nails, but the local mill has not yet resumed operations. Quotations are unchanged. Jobbers quote small lots from stock at \$1.

Barb Wire.—There are some indications of a slightly better feeling in Barb Wire, though quotations remain substantially as for the past few weeks. Small lots from store in New York are held at \$2.15 to \$2.20.

Advices from Chicago.—A very large trade is in progress; shipments from factory are heavy, manufacturers find that they made an error in not accumulating larger stocks during the dull season, as the trade would easily have absorbed much more Wire than is now available. Jobbers' quotations are still as low as those of manufacturers, being only \$1.55 to \$1.60, f.o.b. cars Joliet, for carloads of painted, and \$1.90 to \$1.95 for galvanized, or \$1.70 and \$2.05, respectively, for small lots to be shipped from stock in Chicago.

Eclipse Lawn Sprinklers.—In *The Metal Worker*, January 26, we described the Eclipse Lawn Sprinkler, put on the market by the Crescent Brass & Iron Works, Detroit, Mich. These goods are sold to the trade at the following net prices.

Eclipse Lawn Sprinkler..... Per dozen. 1.50

Blinder Twine.—The Blinder Twine market shows a somewhat firmer tone, with a moderate amount of business. Prices remain about the same as last reported. The Western Twine Company are making an effort to dispose of the large amount of Blinder Twine which has been held by the bankers as collateral, and this Twine proves a somewhat disturbing element in the market. Some buyers consider this held over Twine inferior for use to new made Twine, yet the price at which it is offered affects the price of new Twine. The condition in which the wheat crop is found to be when the snow goes off will naturally affect the prospective de-

mand for and prices of Blinder Twine. The market is represented by the following quotations in 50 ton lots, the same prices in some instances being made for Twine in carload lots:

	Per pound.
Sisal.....	\$0.05
Standard.....	.05
Manila.....	.06
Pure Manila.....	.07½

Wrought Iron Pipe.—In view of the irregular and somewhat demoralized condition which has characterized the Wrought Iron Pipe market for some time, the action of the manufacturers at their meeting held in Pittsburgh January 30, is of more than usual interest and importance. Information in regard to the action taken is given in another column.

Expanded Metal Lath.—J. K. Combs, 107 Chambers street, New York, manager of the Central Expanded Metal Company (Chess, Cook & Co.), Pittsburgh, Pa., announces the following new prices on expanded metal lath. Style A lath, 23 cents per square yard; Style B lath, 19 cents per square yard; Style C lath, 23 cents per square yard; For small lots a charge for cartage will be made in New York City. In lots of 1000 yards no charge for cartage this side of Fifty-sixth street, N. Y. Above Fifty-sixth street a small charge is made for men's time.

Glass.—The present outlook for the Glass trade is not particularly encouraging. Both manufacturers and jobbers decry the low prices at which Glass is being sold, but with the limited demand at the present time there seems to be no reason for any immediate advance. It is understood that jobbers will have abundant stocks of Glass on hand when the spring opens, which have been bought at low figures, and it appears that they will control prices. Manufacturers have probably made the Glass to fill the orders placed by jobbers, and what is now made will be piled up at factory. Although Glass manufacturers have had conferences looking to some united action for improving the condition of the market, no solution of the question has yet been reached. The New York market is represented by the following quotations: For small lots of Double or Single Strength Glass in store, 85 and 10 per cent. discount; in car lots from factory, 88 per cent. discount for Single and 90 and 5 per cent. discount for Double Strength Glass.

Old Rags, Paper, &c.—Demand is fair and dealers' purchasing prices substantially the same as those quoted last week, namely:

No. 1 White Rags.....	lb 3 @ 3¼¢
No. 2 White Rags.....	lb 2½ @ 2½¢
Mixed Rags.....	lb 2 @ 1¢
Blues and 3ds.....	lb 1½ @ 1½¢
Hard Sized White Shavings.....	lb 2½ @ 2½¢
No. 1 White Book Shavings.....	lb 1½ @ 1½¢
No. 2 White Book Shavings.....	lb 1 @ 1½¢
Light Book Shavings.....	lb 1 @ 1½¢
No. 1 Mixed Shavings.....	lb ¾ @ 1¢
No. 2 Mixed Shavings.....	lb ¾ @ 8¢
No. 1 Printed Books.....	lb 1 @ 1½¢
Ordinary Mixed Books.....	lb ¾ @ ¾¢
Newspapers.....	lb ¾ @ 1¢
No. 1 Java Paper.....	lb ¾ @ 1¢
No. 2 Manila Paper.....	lb ¾ @ 1¢
Bogus Paper.....	lb ¾ @ 1¢
Common Paper.....	lb ¾ @ 3-5¢
Straw Chippis.....	lb ¾ @ ¾¢
Binders' Clippings.....	lb ¾ @ ¾¢
Job Butts.....	lb 1½ @ 1½¢
No. 1 Jute Bagging.....	lb 1 @ 1½¢
Mixed Bagging.....	lb ¾ @ 1¢
No. 2 Bagging.....	lb ¾ @ 8¢
Hemp Twine.....	lb 2 @ 2½¢
Manila Rope.....	lb 2 @ 2½¢
Jute Rope.....	lb 1½ @ 1½¢
Mixed Rope.....	lb ¾ @ ¾¢

Old Metals.—Business is somewhat dull, the demand having fallen off perceptibly. Prices show no quotable change. The following quotations represent the current rates paid by dealers in this city:

Heavy Copper.....	lb 7 ¢
Light and Tinned Copper.....	lb 6½ ¢
Heavy Brass.....	lb 4½ ¢
Light Brass.....	lb 3½ ¢
Lead.....	lb 2½ ¢
Tea Lead.....	lb 2½ ¢
Zinc.....	lb 10 ¢
No. 1 Pewter.....	lb 10 ¢
No. 2 Pewter.....	lb 5½ ¢
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, gross.....	\$0.03½ @ .04
Rubber Shoes, carloads, delivered at factory, gross.....	@ .05½
Rubber Shoes, less than carloads, gross.....	@ .04½
White Winger Rolls, gross.....	@ .03½
White Syringes, gross.....	@ .03½

Wallace & Sons' 1895 Catalogue.

We are advised that the old established house of Wallace & Sons, Brass and Copper Rolling Mills, with sample rooms and warehouses at 29 Chambers street, New York, and mills at Ansonia, Conn., are about to issue a new illustrated catalogue. There is little doubt that it will illustrate the progressive position this house have for nearly half a century maintained in the Brass and Copper trade. From a cursory examination of the proof sheets kindly shown our representative, we judge the book will be a very acceptable addition to the catalogue libraries of metal workers, hardware merchants, &c., and will, on account of its complete price-lists of different articles, as well as its tables of measurements, weights, &c., become a standard book of reference for dealers in their line.

We notice that special attention has been given to details, particularly in revising various price lists hitherto more or less confusing, and these changes, together with the profuse illustrations of the various articles they manufacture, make everything quite clear, even to those who may not be thoroughly familiar with the business. The book is also illustrated with cuts showing the improved manner of packing various articles for the convenience and utility of the Shelf Hardware trade, such as Star Brand Copper Rivets and Burrs, Copper Tacks and Nails, Spelter, Solder, &c.

Care has also been taken in specifying the stock sizes of the different goods they carry to enable customers who are in urgent need to be able to see at a glance what they can order, with the assurance of receiving prompt shipment.

Several pages in the back of the catalogue are devoted to tables of weights, measurements, &c., of different Metals, such as Sheet Copper, Seamless Brass and Copper Tubing, Brass and Copper Rod, &c., so as to enable the trade to estimate on goods of this description comprehensively.

THE YARNELL TIN & HARDWARE COMPANY, Somerset, Ohio, have been formed with a capital of \$15,000.

THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, February 9, 1895.

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The Index of *The Metal Worker*, Volume XLII, July-December, 1894, is now ready and may be obtained on application to David Williams, publisher, 96-102 Reade street, New York; or to 290 South Fourth street, Philadelphia; Room 509 Hamilton Building, Pittsburgh; 59 Dearborn street, Chicago; Rooms 22-24 Pickering Building, Cincinnati; Bank of Commerce Building, St. Louis; 146 Franklin street, Boston, and 312 The Cuyahoga, Cleveland.

Hobbies.

There are hobbies and hobbies, hobbies useless and hobbies profitable, hobbies which are futile and transient and hobbies which are of perennial interest. But the value of a rational hobby to a busy man can hardly be overestimated. To have some pursuit to care about and follow up, distinct from the particular business which constitutes the main work of his days, has a decided tendency for good on the well being not only of the young, but of the old. It fills up the spare moments of the boy or young man, keeps him from temptations out of doors and gives him something to think and occupy himself about indoors. It keeps his mind from preying on itself and tends to broaden his character and his sympathies.

Their Good Influence.

The adoption of a hobby in early life, be it artistic, mechanical, literary, scientific, social or merely commonplace, leads more than often to pleasant intercourse and the companionship of kindred spirits to which the young man might not otherwise be able to attain. Possibly it may afford an avenue to influence or fame in after life, or, still better, it may open the door of opportunity to minister profit or pleasure to others, making the man a bless-

ing to his fellows, even to old age. Hobbies have helped many an old man to enjoy life and keep his interest and intelligence keen to the end of his days. The man who has no special interest outside his daily business tasks is, as a rule, laying up for himself a miserable old age. It is pitiable to see how some men become completely absorbed in the business of money getting. Gradually their business absorbs more and more of their thoughts until at last they can think of or care for nothing else. Their minds narrow down to one groove, out of which they cannot escape. Then, when sickness or other cause cuts them off from active participation therein, they are bankrupt of interests, are incapable of adopting new pursuits, and become a misery to themselves and all around them. Much of this might be avoided by the cultivation of a profitable hobby in early life.

News and Notes.

The powerful British battle ship "Majestic" was launched at Portsmouth, England, on January 31. The "Majestic" is a twin ship with the "Magnificent," which was launched at Chatham on December 19. They are described as first-class barbette battle ships of 14,900 tons displacement; and are the largest British war vessels afloat. The "Majestic" was launched in the short space of 14 months from the date her keel was laid.

The difference between a practical man in an executive municipal office and the series of mere politicians who have preceded him is exemplified in the case of Colonel Waring, the well known sanitary engineer, who has recently assumed the post of Street Cleaning Commissioner of New York City. Since his advent the city streets have been kept clean despite extremely trying conditions of weather, the snow being removed promptly instead of being suffered to lie untouched for days, as has been previously the case.

It has been found necessary to place additional steel girders in various portions of the new Public Buildings of Philadelphia in order to strengthen them.

The federation of all the Australian colonies was approved at a special conference of colonial government representatives held last week at Hobart Town, Tasmania.

Work has been commenced on the foundation of the new plate bending shop at the Brooklyn Navy Yard. The building, for which Congress appropriated \$70,000, will be 200 feet long by 85 feet in width and will be constructed of steel.

The United States Minister at Madrid has cabled the State Department that the bill embodying the *modus vivendi* for restoring the former rates on United States exports to Cuba and Porto Rico

has passed the Spanish Senate. The *modus vivendi* will operate until a definitive treaty on the subject is executed between the two countries.

A new locomotive apparatus for the purpose of liquefying snow and ice was tried with apparent success in New York City a few days ago. The machine is self propelling and weighs 8500 pounds. It converts the snow into water, which is immediately turned, after the manner of a sprinkling machine, into the gutters with sufficient force to carry it into the sewer openings.

A committee of nine prominent citizens has been nominated by Mayor McKenna of Pittsburgh to investigate the improvements most needed in that city, and it is proposed to issue \$5,000,000 worth of bonds to carry out these improvements.

The plate glass manufacturers of the United States are said to be about to form a new combination, avoiding anything in the nature of a trust. The capital stock will be about \$10,000,000.

The statement of mill construction in the United States for 1894, given by the *Textile World*, indicates a material falling off in this field of industry. Along with a serious decrease in cotton mill building, however, there is stated to have been considerable enlargement of existing plants. The new spinning mills projected for this year are, moreover, decidedly more numerous than those planned at the beginning of 1894. On the other hand, of textile mill construction in general, the impression is conveyed that an increase in new construction is not expected for the coming year. The statement of new textile mills constructed and spindles added in each of the last three years is as follows:

	1894.	1893.	1892.
Cotton.....	23	52	73
Woolen.....	17	33	49
Knitting.....	40	53	49
Silk.....	11	15	21
Miscellaneous.....	23	19	36
New spindles added.....	422,000	600,000	1,100,000

The January Treasury statement shows a phenomenal loss of \$41,500,000 in the Government gold reserve during the first month of the year. At this rate the reserve would be obliterated by the beginning of March.

The president of the Amalgamated Iron and Steel Workers' Association of Pittsburgh has reported to the Treasury Department that he has reason to believe that tin workers from Wales and elsewhere are preparing to come to this country under contract to take the place of American workmen who are resisting a proposed reduction in their wages.

Arrangements have been completed this week for the starting of a line of steamers to run from Portland, Ore., to China and Japan, in connection with the Oregon Railway & Navigation Company. The Great Northern is said to have a share in the scheme.

The State Gas Inspector of Indiana, whose office the Legislature has decided to abolish, has made public the statement that Indiana's natural gas supply, at its present rate of consumption, will be exhausted in four years.

THE LETTER BOX.

Driven Wells.

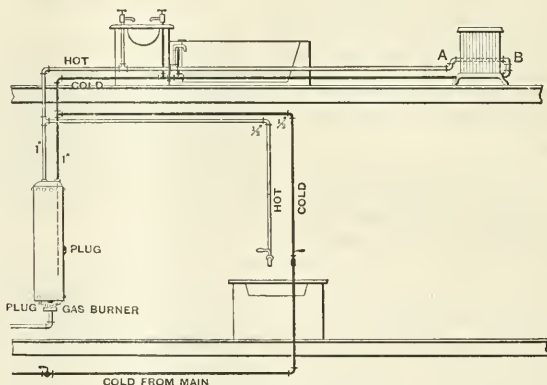
From F. R., Ohio.—Please advise me whether drive wells are used in Canada and England to any extent. Also about how far it is to water, as a rule, and to what soils the wells are adapted?

Answer.—Drive wells are used in Canada and England to a large extent. Since its first introduction for private water supply following its invention and use for military water supply by Colonel Green of the Seventy-sixth New York Regiment during the Civil War in 1861, the system of driven wells has spread almost into universal use. It was adopted as a military resource by the British army in its expedition to Abyssinia (1867), and was named in England "The Abyssinian pump," and was also carried into Algiers by the French army of occupation. As an adjunct to a moving army in an enemy's country the system at once became a permanent safeguard for the supply of pure and wholesome water, free from the perils of pollution by an enemy, and, in fact, is no less a safeguard for every one dependent upon an open well as against accidental or intentional pollution. From its military publicity its use spread to a large extent in England and her dependencies, to the Continent and we may say throughout the civilized world, to India and even now to the wilds of Ashantee, as a part of the French army commissary. In fact there is scarcely a recognized nation among whom this system of obtaining water is not known. It is estimated that the number of driven wells furnishing fresh and wholesome water in the United States has reached the 1,000,000 mark. Any soil that a pointed pipe can be driven into and that contains a water stratum within 30 feet from the surface is suitable for driving a well tube for a common pump connection. Where the water stratum is at a greater depth, up to, say, 40 feet, a well pit to allow of placing the pump chamber and bucket down to the water drawing distance is in order. For greater depths the deep driven well system of the American Well Works, Aurora, Ill., and the Cook Well Company of Chicago and St. Louis, are types of the best method for economical water supply from deep driven wells. The only difficulty in driving well tubes is found in the boulder drift, where large boulders sometimes obstruct the way, which should only cause a loss of time in drawing the tube and driving again in a nearby place. In some instances this has been done several times with, possibly, the loss of a tube before a successful well

is obtained. Not only is the drive well used for a new water supply, but it may be used to great advantage for the reinforcement of old wells that lose their water in dry seasons, as described and illustrated in *The Metal Worker* of July 21, 1894. The gang system of driven wells, consisting of a number of pipes driven in lines at distances of from 25 to 50 feet apart, and all connected to a suction line pipe and to a pump, has become one of the leading features of the present water supply for cities and villages in the United States and other countries.

A Faulty Arrangement of Piping.

From J. H. D., Richmond, Ind.—I would be pleased to have *The Metal Worker* give me some assistance in a matter which is causing me consider-



A Faulty Arrangement of Piping.

able trouble. I have a plumbing job which at times runs warm water from both the hot and cold faucets. I have had another plumber look the job over who points out several defects, and I have been advised by him to consult *The Metal Worker* for a remedy. The sketch shown herewith indicates the arrangement. Both of the faucets at the washstand give hot water at the same time, although sometimes one is hot and one cold, and the faucets at the bathtub act in the same way. The radiator has no valve to shut off the circulation through it, yet it never gets more than lukewarm. There are only two pipes going to the bathroom and they both leave the top of the boiler in the kitchen. No means have been provided for emptying the boiler, a plug being placed in both the bottom and side connection, as the boiler is heated by a natural gas burner placed beneath it. The water in the boiler seems to get thoroughly hot.

Note.—Some of our readers may have suggestions to offer for changing the piping of this job. It is a simple matter to provide means for emptying the boiler. The plug can be taken out from the bottom of the boiler and a pipe run from it to the trap under the sink, having a stop cock placed near the boiler to prevent the water wasting. The trouble at the faucets is caused by what ordinarily would be a cold water service pipe being used as a return pipe from the radiator. The hot water that flows from the cold water faucets is forced to do so by the cold water stopping the circulation in the heating system and driving all the hot water out of the faucet when opened—that is, in the pipe between where the supply pipe connects with the return and the faucet. This can be overcome by using a separate return pipe from the radiator and carry-

ing it down and connecting it at the side of the boiler where the plug has been placed. This will make the cold water service entirely independent of the hot water to the faucet and the heating system. The failure of the radiator to heat may be due to the size of the pipe leading to it. This pipe should be continued 1 inch in size all the way to the radiator, and the return pipe should be 1 inch all the way back to the boiler.

Size of a Gallon.

From J. E. K., New York.—Please inform me through *The Metal Worker* what is the size of a gallon of water, and what it weighs per cubic foot? I have had an argument with a friend and told him there are about 7½ gallons of water in a cubic foot and that the

weight was about 56 pounds. He said there were 6½ gallons and the weight was 62 pounds. Please tell me which was right.

Answer.—Our correspondent will be surprised if we tell him that both of the statements are right—that is, the United States gallon contains 231 cubic inches, and accordingly there are 7½ or, exactly speaking, 7½ gallons to the cubic foot. The imperial gallon, which is the old standard and the one used in Great Britain, contains 277.274 cubic inches, and, therefore, a cubic foot is equal to 6.23 imperial gallons. We do not quite understand our correspondent's reference to weights. The weight of a cubic foot of water is about 62½ pounds—that is, it varies from 62.417 pounds at 32° F. to 59.7 pounds at 212° F. A gallon according to this would weigh a little over 8 pounds.

Rusting of Gutter Outlets.

From E. F. B., Greenville, Pa.—I would like to be informed through the columns of *The Metal Worker* why the tubes soldered on hanging gutters rust out before the conductor. Is there any remedy?

Answer.—The outlet tube, which is soldered to the under side of a hanging gutter, is usually made tapering, so as to slide into the connecting elbow or pipe some distance. As the tube is tapering, it may be possible for water to be held by capillary attraction between the two, and thus cause the tube, and perhaps the connecting part of the elbow, to rust. If this be the cause, the use of well coated heavy tin for the outlet and connecting joint would be an advantage. If any of our readers have encountered this difficulty they are requested to give their opinions on the subject.

Insufficient Air Supply.

From G. & W., Elkhart, Ind.—Noticing the letter of "A. H." of Milwaukee in *The Metal Worker* of December 15, on an insufficient air supply, I was much interested, as I have a similar problem. One furnace among a half dozen which we have set just like the one reported, with a single exception, acts in a similar way. The furnace is of ample size, two 8 inch pipes connecting with 3½ x 10 inch stacks leading to the second floor. One 8 inch and four 9 inch pipes lead to registers in the floors for heating the first floor. The furnace sets over a pit, with a cold air trench 12 x 24 inches in size leading to it. My carpenter, in connecting the wooden box from the window to the trench, increased the size at the lower end so that it is 12 x 30 inches. I do not know whether this is the cause of the furnace becoming excessively hot or not. The cold air window opens to the north and the furnace faces to the south, and the pit beneath the furnace is 30 inches in diameter. The furnace does not furnish enough heat upstairs for the amount of coal consumed. I have a 9-inch return pipe from the first floor to the base of the furnace, taken in through the casing. The hot air pipes, with one exception, lead to the

southwest, east and northeast, one 8-inch pipe only running to the north-west. If you can give me any information on this subject it will be esteemed a favor. It seems to me that in the case of "A. H." his 10 x 12 inch pipes are larger than necessary, and surely the 5 x 13 inch stacks are too large for the cellar connections to him.

Answer.—In figuring up the area of the hot air outlets we find that they amount to 402 square inches, while the area of the cold air supply amounts to 268 inches, which is less than it should be. It is a common practice, as winter draws nigh, to see that all windows and doors are tightly closed, which prevents the escape of air which is already in the room, and prevents the entrance of the hot air which must come in to heat the rooms comfortably. If the doors all through the house were open, the 9-inch return pipe might be of some assistance in heating the house, but the trouble seems to be that the cold air tube is too small to properly supply the pipes, and there is not sufficient outlet for the air that is already in the house to escape and make room for the warm air to enter to heat the building.

Estimating Labor in Pipe Fitting Contracts.

From E. S., Cincinnati, Ohio.—Will *The Metal Worker* please inform me how time or labor on a steam or hot water heating plant is estimated? The principal information I want is the number of feet of pipe a man is supposed to lay in a day of ten hours.

Note.—This is a question that we would be pleased to have the readers of *The Metal Worker* discuss at some length. Some of the old rules that applied to laying gas pipe were adapted to piping heating plants in the early days of the business, and some rules existed in reference to the running of cast iron pipes when all the joints were made by rusting. But these are not applicable to the work as now done. A common rule is to estimate the time required by the number of radiators used. On small heating plants, where there are from six to eight radiators used in connection with the boiler, it has been usual to calculate from one and a half to two days' work for a pipe fitter and helper for each radiator in hot water work. Steam work is done sometimes on the one-pipe system, sometimes on the two-pipe system, and the labor required ranges from one to one and a half days to a radiator connection. On larger jobs, where 20 or more radiators are used, the time is materially shortened, so that hot water work may be reduced to one and a half days and steam work to one day, or even less. This method of calculation does not consider the possibilities of having to make special runs around obstructing girders or other constructive peculiarities of the building or cutting through walls.

Chimney Sweats.

From F. W. H., Lafayette, Ind.—Will *The Metal Worker* please describe a remedy for a chimney that sweats so badly that the condensation runs down the wall and looks like tar on the ceiling of the room? On the outside the chimney is wet and fairly steams. The chimney is in a two-story brick house, having a furnace which is connected to it by means of a smoke pipe and uses natural gas as a fuel. The chimney is in the north wall of the building. I have cut a hole in the wall of the chimney near the top of the second story with no beneficial results.

Note.—As the dimensions of the chimney are not given it is difficult to state what causes the trouble. It is certain, however, that cutting a hole in the chimney was a step in the wrong direction, and if the chimney steams on the outside it is fair to suppose that the chimney is not air tight, which it must be to be satisfactory in operation. Gas apparatus does not require so large a chimney, as a rule, as coal apparatus, and it is fair to suppose that the products of combustion condense before escaping from the chimney and cause the trouble reported. It is more than likely that the chimney has been used for other fuel in the past, and the condensation is colored by the refuse from the previous fuels. It is quite probable that better success can be secured with the apparatus and the trouble avoided by running a pipe inside the chimney clear to the top, and if the pipe is put together in the reverse of the usual way condensation will run down inside of the pipe to the bottom.

Barker's Chimney Top Ventilator.

From H. W. M., Wadsworth, Ohio.—Please inform me if there is a patent on the chimney top made like the sketch inclosed? The top is described as a sure cure for low smoky chimneys.

Answer.—The sketch in our correspondent's letter shows Barker's chimney top ventilator, which was patented October 27, 1879. G. E. Barker, St. Lawrence, S. Dak., and H. W. Barker, 7820 Wallace street, Chicago, issue licenses to manufacture under royalty.

The water supply of the city of Brooklyn has of late been of such poor quality that the citizens were not surprised when Health Commissioner Emery issued a formal notice to the householders that the water, as it enters their houses, is unfit for potable purposes, and must be thoroughly boiled before use. Analysis of the water showed it to be largely impregnated with vegetable matter and mud sediment. It is believed that the recent storms have affected the supply, the melting snow carrying deleterious substances with it into the ponds from which the supply is drawn. In many cases the pipes have become clogged, and an eel was found a day or two ago in a water pipe in the Twenty-third ward of the city.

The city government of Camden, N. J., have contracted with the Dixon Crematory Company of Findlay, Ohio, for the erection of a garbage crematory at a cost of \$10,000.

ROOFING AND CORNICE.

The Evolution of an Old Building.

The adaptability of sheet metal for architectural purposes has been demonstrated during the past 15 years by the ex-

plates, and in this direction a practically unlimited field is open to the metal worker. The manufacture of sheet metal plates in iron steel and copper for architectural purposes has already become an important industry,

and has proved to be such as to warrant their use in any and all climates, and they have been adopted in many cases in preference to stone or brick as successfully withstanding climatic and atmospheric influences.

To give an idea of their usefulness in the renovation of old buildings, we present a series of illustrations showing the different stages in the evolution of an old building to one embodying modern ideas of architecture. Fig. 1 is a view of an old three-story brick building recently purchased by Gara, McGinley & Co., Philadelphia, and known as 23 South Seventeenth street, in that city. The firm mentioned have been identified with the growth of the architectural branch of the sheet metal in-



Fig. 1.—View of Old Building.



Fig. 2.—Windows Removed and Doors Bricked Up.

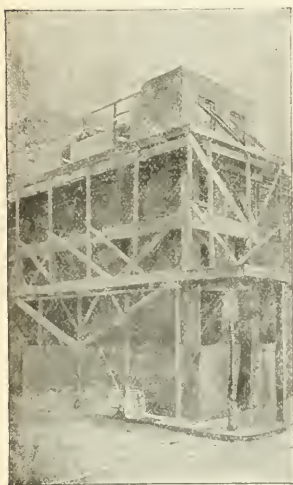


Fig. 3.—Completing the Third Story.



Fig. 4.—Putting on the Metal Plates.



Fig. 5.—Finished Building.

tent of its adoption. Numbers of new buildings in all parts of the country have exteriors composed entirely of sheet metal. Old and dilapidated structures of wood or brick, too, may be modernized and improved by the use of sheet metal applied in the form of

and manufacturers have brought their productions to such a state of perfection that material of all kinds is now so closely imitated in metal as to make actual examination necessary to discover the substitution. The endurance of the plates has been severely tested,

and they conceived the idea of transforming the old building into one of modern appearance in order to practically demonstrate their abilities in this direction. Fig. 2 shows the windows removed and the side doors bricked up. The window openings are not enlarged, and beyond the bricking up of the doors no change in the appearance of the building is noticeable. In Fig. 3 it will be seen that the third story was obtained by squaring the peak of the house. The work was rough, no pointing or finishing being required, and the bricks were taken from an old wall at the rear of the house. Fig. 4 shows the method of putting on the metal plates. The bricks are first plugged, that is, wooden plugs are driven into the mortar for use as supports or nailing surfaces for the wooden strips to which the plates are attached. The window arches are formed on the wide strips seen above the old windows. The upper story has been treated with a coating of red lead preparatory to painting. Fig. 5 shows the finished building. The walls

of the two upper stories are covered with rock faced siding plates; those of the second story from the top to the lower part of the arches with tiling plates, and the remainder with pick faced plates. The upper story is painted to represent Indiana limestone, and the lower stories represent red sandstone.

FLASHINGS.

"GALVANIZED IRON CUSHION" is the curious but unexplained title of a little pamphlet that reaches us from the Apollo Iron & Steel Company, Pittsburgh, Pa. It is a remarkably neat little publication, with merely the three words mentioned on the front cover. On looking within it is discovered what the phrase refers to. It is a cushion which is placed between the sharp end of the band and the sheet of galvanized iron, acting as a washer and preventing the top sheet from being injured. Illustrations of the cushion are shown, and the pamphlet further goes on to tell of the advantages of the Apollo iron.

GEORGE OHL & CO., Newark, N. J., have recently completed and shipped to the Kinnear & Gager Company, Columbus, Ohio, a new machine for decorating sheet metal by indentation. By varying the pressure widely different effects can be gained in the appearance. The machine will work sheet metal up to 36 inches wide, and the process of decoration is completed in one operation instead of several, as formerly.

G. MOSER & SONS have moved into their new offices on the fourth floor at 225 West Second street, Cincinnati, Ohio, their increase of business having compelled them to enlarge their press rooms, which now take in all of the fifth floor of the building. Among extensive contracts that the company have recently completed was one for \$1000 worth of dies for the Metallic Cabinet Company of 92 Elm street, Cincinnati, for the manufacture of metallic furniture. Messrs. Moser & Sons do a large export trade, having within the past few weeks received three direct orders from Australia for tin tags, and have secured a contract from a large firm in St. Louis for supplying their entire requirements for 1895, which will amount to about 150,000,000 tags.

THE LUFKIN RULE COMPANY, Saginaw, Mich., have announced a considerable reduction in the price of their Magic pattern rule, a device patented five years ago, and which has had a very extensive sale. The rule consists of a bar marked in circumference inches on the front, and in inches and eighths on the back, and two slides, with set screws, into which trammel points are fastened. For laying out elbow patterns the left hand slide is fastened to the end of the bar by the set screw, and the right hand slide is set according to the diameter of the elbow desired. A flexible steel ribbon on the top of the bar is then raised to the required height, according to the angle of elbow wanted, this height being read from a chart furnished by the Lufkin Rule Company. The chart is 19 x 23 inches in size, mounted on linen, and contains besides the elbow diagram, rules for cutting all kinds of flaring, oval, cylindrical, cone shaped vessels, &c., with the aid of the Magic pattern rule. The rule can also be used for a straightedge, circumference rule and trammel.

THE FIRM of Welteroth & Brand, Williamsport, Pa., have been dissolved,

the business to be continued hereafter by Joseph Welteroth.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

H. A. R. DIETRICH, Bethlehem, Pa., the steam heating and hot water contractor, has completed the steam heating plant in the Municipal Building. The second boiler was put in recently.

J. J. HOGAN, New Haven, Conn., is overhauling the plumbing in Thos. Kelly's building, putting in new fixtures.

THE SCHOOL BOARD of Springfield, Ohio, is advertising for bids for heating the Lagoda Building.

AT A MEETING of the Board of School Government last week B. G. Carpenter & Co., Wilkes-Barre, Pa., were awarded the contract for heating the new Grant Street School Building for \$2750.

MULETT & HAY of Racine, Wis., have been awarded the contract for putting the steam heating plant in the Racine Court House at \$1788.

A NEW HEATING APPARATUS is being put in the Union School Building, at Cooperstown, N. Y. J. Yates of Schenectady is supervising the work.

E. W. BECK & CO., Derby, Conn., have the contract for heating the Congregational Church at Shelton.

THE New Haven Record says: J. A. Campbell & Co., New Haven, Conn., have the contract for the plumbing for a two-family house for T. Coyle.

THE COMMISSIONERS of PUBLIC WORKS, Milwaukee, Wis., are advertising for plans for a \$12,000 school building that is to have a plumbing, lighting and heating system.

THE THOMPSON MFG. COMPANY of Lancaster, N. H., are putting in a steam heating plant for Pattee & Clark.

M. J. KIERE, New Britain, Conn., has the contract to do the plumbing and gas fitting in the new house of W. H. Cadwell.

THE ATTAWANGON HOUSE at Danielsonville, Conn., is to be remodeled and to have a steam heating plant.

AN APPROPRIATION of \$2000 has been made for heating and making some other improvements in the County Children's Home at Norwalk, Conn.

THE ARNOLD COMPANY, New Haven, Conn., are plumbing the new Borges flats on State street, each flat having bath tub, lavatory and water closet, Peck Bros. & Co.'s fixtures being used.

THE FOSKETT & BISHOP COMPANY, New Haven, Conn., have been awarded the contract for plumbing the new Winchester Building on Orange street. The Durham system will be used, with Meyer-Sniffen fixtures. There will be 22 water closets, 29 basins and 11 urinals, the contract price being between \$7000 and \$8000.

THE EXETER MACHINE WORKS, Boston, Mass., are furnishing one 24-section Exeter boiler and a carload of Exeter radiators for the Armsby Block, Worcester, Coddling & Taft, Worcester, being the contractors. Among other orders is one for a 16 section Exeter boiler and a carload of Exeter radiators for the E. W. Miles Block, Brookline, Mass.,

where Kenrick Brothers are doing the work. They are likewise furnishing a 12-section boiler with radiators for the George P. Staples & Co. Block, Washington street, Boston.

THE POWERS REGULATOR COMPANY, 36 Dearborn street, Chicago, are to place their automatic heat regulators in four of the city school buildings.

THE L. H. PRENTICE COMPANY, 203-205 Van Buren street, Chicago, are to furnish the Reliance Building, State and Washington streets, with the Paul system of circulating exhaust steam without back pressure.

THE J. L. MOTT IRON WORKS, 311-313 Wabash avenue, Chicago, are to furnish 14 No. 4 and 1 No. 5 Sunray hot water boilers for the stations of the Metropolitan Elevated Railroad. This order, in connection with one previously received, makes 31 Sunray heaters that are to be used in the stations.

THE FULLER & WARREN COMPANY, 147-149 Lake street, Chicago, have contracts for warm air heating in the following residences; Frank Wessman, 171 Baxter street; F. G. Maher, 5112 Union avenue, two furnaces; E. Garrison, Rogers Park; M. L. Greely, Winnetka.

DORNELLY & BURKE, 187 Columbus avenue, New York, are doing the plumbing in three flat houses for Edward Kilpatrick.

HARDWICKE & CO., Niagara Falls, N. Y., have just closed a contract with the State authorities for the heating of the new armory of the Hornellsville Separate Company.

GLINES & KEELER, Hudson, Mass., have received from the William H. Page Boiler Company three sectional boilers, which they are to put into the blocks of C. L. Woodbury Sons, E. P. Lawrence and C. W. Holden of Hudson.

HILLS & FOX, Hartford, Conn., have the contract for the plumbing and gas fitting in one of the new fire engine houses at Hartford, Conn. The contract for the same work in the other house has not yet been let.

GEORGE L. ROOP, 79 Lake street, Chicago, is to place a Prince Royal warm air furnace in the residence of E. F. Wilbur, Winnetka, Ill.

D. S. RICHARDSON, representing the New York Central Iron Works, Geneva, N. Y., presented the delegates to the plumbers' convention, at Waterbury, Conn., with a pocket comb and case bearing the suggestion, "Get this through your hair." "There are 20,000 Dunning boilers in use."

ZIEGLER BROS., plumbers and steam fitters, Elgin, Ill., have completed a large steam job in Ackemann Bros.' block, and have under contract a water works job at Carpentersville for Mrs. G. P. Lord. The job consists of two power pumps of 5000 gallons per minute each.

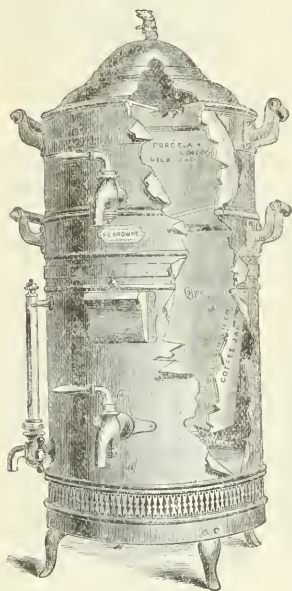
THE MCCORMACK STEAM HEATING COMPANY, Wallingford, Conn., have been awarded the contract for heating the new Gay flats on Chapel street, New Haven.

J. C. WALSH of Chicago, known to many of our readers as a manufacturer of gasoline torches, was killed last week by an explosion of gas at the Gaynor Hotel. A few years since he was severely injured by an explosion of gasoline.

THE RETAIL STORE.

Browne's Tea and Coffee Urn.

A tea and coffee urn combining a number of interesting features of construction has lately been introduced to the trade by F. E. Browne of 314-316 South Spring street, Los Angeles, Cal. The urn is intended for use in hotels, restaurants, coffee houses, &c., and reference is made by the manufacturer to its elegance and economy. The construction is such that there is no metal in contact with the milk or coffee, as the jars of the urn are made of cast iron lined outside and inside with porcelain, and the bottom is so arranged as to completely drain the jar. The urn is provided with a flat cast iron porcelainized cover which fits both jars and is designed to be used on either. In the engraving presented herewith the cover is shown provided with a copper or nickel plated dome or ornamental top to prevent the radiation of heat. Portions of the sides of the urn and jars are broken away for the purpose of showing the interior arrangement. Each jar is incased in a highly polished heavy copper or nickel plated casing, that of the coffee jar being water tight and forming a water reservoir and



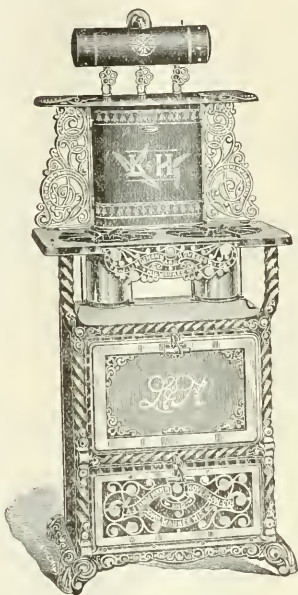
Browne's Tea and Coffee Urn.

steam chamber around it. The coffee or tea is heated through the medium of water and steam and is brought nearly, but not quite, to the boiling point, so that the contents of the jar will retain its aroma and flavor for a number of hours. The urns are so constructed

that worn faucets can be quickly and easily replaced at small expense. The coffee jars have a capacity of 5 gallons and the milk jar of 2½ gallons.

The L. & H. Process Stove.

The A. J. Lindemann & Hoverson Company, 223 Reed street, Milwaukee, Wis., have brought out a new process stove, of which the cabinet style is illustrated in Fig. 1 of the cuts. It has a large, high shelf, a large oven and is neatly trimmed and richly decorated throughout. Among other special features the oven shelf is peculiarly worthy



The L. & H. Process Stove.—Fig. 1.—Front View of Cabinet Style.

of notice. This shelf is made on an original plan, of wrought iron, so that it is not only very light and strong but will not break if it should fall. A single strip of metal is used, which is bent into the necessary shape of an oven shelf and riveted at the sides so as to form a rigid piece of work. This cabinet stove is made with two top cooking holes two top holes and step, and three top holes and step. The company also manufacture process stoves with open frames in all sizes.

The burner used by this company is of original design, covered by its own patents, a sectional view of it being given in Fig. 2. The subflame is in a heavy bell shaped casting, surrounded by a chamber, in which air is heated and forced up to the carburetor. On the admission of gasoline into the carburetor it drops on a number of vertical corrugated strips of metal, where it becomes volatilized and com-

mingles with the heated air. No asbestos is used to absorb the gasoline and no material is introduced for the purpose of saturation. The manufacturers state that by this means all smell is avoided when the valves are closed and the burners extinguished. They also claim that the direct supply of heated air forced to the carburetors

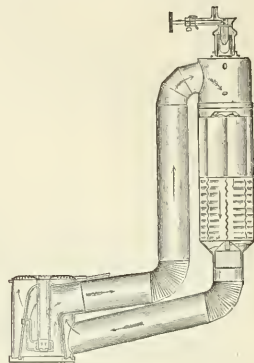


Fig. 2—Sectional View of Burner.

greatly increases the calorific properties of the volatilized gasoline.

MEMORANDA.

THE NILES MFG COMPANY of Niles, Ohio, are meeting with a gratifying demand for what is known as the Crusty Bread Pan. Those who have handled it speak in high terms of its merits, and the manufacturers are looking for an extensive trade in it. The pan is made of cold rolled steel, with a smooth finish, and measures inside 4x14 inches. The bottom of the pan is curved, and the corrugated ends are flared sufficiently to allow the pans to be nested for shipping. The curved bottom is claimed to have the merit of retaining the moisture, so that the bread is much more satisfactory than would otherwise be the case. The makers state the shape and size of the pan is such that the loaf is thoroughly and perfectly baked to its center, while producing a sweet, crisp crust over the entire surface.

W. P. PHILLIPS & Co. and Webb, Stevenson & Co., Nashville, Tenn., have consolidated their stove and tinware businesses under the style of Webb, Stevenson & Phillips.

ROYAL & SLUSSES, dealers in stoves and tinware, Hawkinsville, Ga., have gone out of business. They are succeeded by W. E. Greyson.

THE TORRANCE IRON COMPANY, Troy, N. Y., are putting on the market a new mop wringer which they claim "wring the mop without a slop."

THE JOHN TOBIN MFG. COMPANY, Newark, N. J., are issuing a circular of their Best Coffee Pot, claiming that it makes coffee that is as clear as wine, in

a minute. It is made of planished tin and provided with a patented device for straining. The pot is said to be quite popular and having a run wherever introduced.

WILLIAM GILMORE has purchased the interest of William Randall in the Randall & Ward stove truck concern at Le Roy, N. Y. Hereafter the firm name will be Ward & Gilmore. The retiring partner, Mr. Randall, will give his entire attention to the manufacture of wire fence.

THE PARTNERSHIP existing under the firm name of C. C. Smith's Sons Company, 301-303 Washburn avenue, Terre Haute, Ind., was dissolved by mutual consent on Monday, January 28, Edwin F. Spottswood retiring from the concern. The business will be continued by A. N. and H. S. Smith, who assume all indebtedness of the company and to whom all accounts and notes due are payable. The company are extensive dealers in stoves, ranges, furnaces, mantels and grates, hardware, agricultural implements, &c.

PRICE & POLK, Jackson, Tenn., dealers in stoves and tinware, have dissolved partnership. Thomas M. Polk will continue the business.

H. F. LIVERMORE & Co., 34 Oliver street, Boston, Mass., will look after the New England States business of the National Wire & Mfg. Company, Canton, Ohio.

The Art of Display.

BY FOSSIL.

The desire for "showing off" is inherent in human nature, being as old as original sin. We may imagine that the primitive Edentates, when the matter of their first clothing was considered, had some regard to the color and fit of their fig leaf garments; also conclude that the universal interrogation: "How do I look?" arises from our common heredity. The motives for attracting favorable attention are various, but perhaps that which leads to "pearl in' out" and "walkin' pride" is the earliest acquired. In maturity we transfer a portion of the inbred personal pride to a pride of pocket, and study how we can best fill the same through inducements to the purchasing public. From this arises "advertising," which is an important business motor and is recognized in its many forms as a necessary factor in desired success.

It is the purpose of this paper to refer to that form of advertising which consists of showing the thing rather than telling about it. It has been said that "figures don't lie," but it is generally considered that this reputation for veracity does not extend to oral or written statements; also skeptical people say that the proverb only applies to lay figures; therefore, as "seeing is believing," it is pertinent to the subject to offer an opinion as to the way of making our display magnetic, or in common phrase to draw trade. He who calls attention to his place of business by an attraction which is entirely foreign to his trade, may succeed in enlisting the interest of curiosity, which may be desirable if it leads to anything better, but often it is like a bare polished hook which fishes may possibly admire but do not bite at. That showing which excites curiosity, but does not satisfy it, is to be preferred, because it invites to a further investigation and perhaps contact with the offered temptation, which is more likely to change the possible

into a probable customer. A passing traveler once saw the tail of a calf protruding through a hole in a door. Having his curiosity awakened, he came to the conclusion which the evidence seemed to justify and applied at the door for further proof.

"Where is the calf?" he inquired of the occupant. "I was wondering how it got through so small a hole."

"That is my sign," said the other, "and this is the office of my tannery. I can show you some good leather, &c."

The story does not tell if a sale was made or not, but the unique sign caused two movements toward it. It is doubtful if any display can long retain the attraction of its initiative, for we are not favorable to anything stale either to see or to eat. The adage, "A thing of beauty is a joy forever," will not apply to those stereotyped window dressings which the passerby gets as familiar with as with his own old clothes. For this reason there are few illustrative signs that do not become monotonous after a continued acquaintance, and liable to another proverb, "Familiarity breeds contempt."

The three balls of the pawnbroker and the wooden effigy of the tobacconist are recognized as legitimate trade-marks, but there is nothing inviting about them, and they only give us the pointer we are looking for. In front of a store in incognita there may have been seen for years back, and perhaps now, if it has survived exposure, a counterfeit small boy that was supposed to hint at clothing for sale. This inanimate youth always wore the same faded suit and ancient covering because his owner saw no use in exposing anything new to the street dust. The boy marked a place to trade, but did not invite it. Of course the average dealer does not display after that fashion, but not a few incline toward it. Perhaps the successful artist of display should be born, not made, but he who can engage a curiosity that stops to see, an interest that leads to investigation and a desire to possess, is likely to have a satisfactory result.

Reading Stove Dealers' Association.

The Stove Dealers' Association of Reading, Pa., recently held their fourth annual banquet in the new annex of the Café Bissenger, in the city named. The association was formed for the mutual benefit of those engaged in the retail stove and hardware trades, and for the purpose of maintaining uniform prices on the goods handled. At the banquet in question representatives of both the Reading Stove Works and the Mount Penn Stove Works were invited guests, the toastmaster being Charles A. Prizer of the former concern. At 8 o'clock the members and their guests sat down to a bountiful spread, which was excellently prepared and splendidly served. The decorations were entirely unique in their way and consisted of a display of tinware and stove supplies, which, according to a local paper, "would have stocked a small shop." In the front of the center of attraction was a tin man, the hat being a tin kettle, the head a tea kettle, the body a lard can, the legs stove pipes and the arms pint measures, funnels and scoops. It was made by Lewis Dauth and William T. Hain and was the subject of no little comment on the part of those present.

The members and guests found at each plate a miniature article of tinware

attached to baby ribbon, which they tied in the lappet of their coats. By a singular coincidence, though it might have been a joke, says a local paper, Charles S. Prizer found a miniature tin cup at his plate and he was dubbed the original tincupper of the Eighth ward.

President Bitting occupied the place at the head of the table, and on either side sat ex-presidents Milton H. Schnader and Wm. T. Hain. When the covers were removed Charles S. Prizer was introduced as the toastmaster, and in a few pleasing remarks he introduced the new president, Wm. H. Bitting.

Toastmaster Prizer called upon the following members, who responded: Lewis Dauth, an honorary member, who has a voice of good range; M. H. Schnader made a grate speech; Walter S. Prutzman spoke on poker, iron and otherwise; Wm. S. Rapp, Wm. T. Hain, Grant Nagle and Harry E. Richards also fired up the members with good speeches. The toastmaster, at the conclusion of the speeches, tendered the thanks of the association to Mr. Bissinger, to which the latter fittingly responded.

Those present were: W. T. Hain, Lewis Dauth, Harry E. Richards, John P. Dauth, William Bridgman, U. J. Mast, Milton H. Schnader, Grant Nagle, Charles Nagle, Willis Bridgman, Arnold Dauth, William B. Yeager, Jacob Otto, Walter E. Prutzman, F. Wagenbort, Wm. H. Bitting, T. G. Hill, N. Lewis, J. L. Fett, N. Homan, Wm. T. Crosby, Chas. Fredericks, R. A. Rankin, J. B. Ganter, James Hafer, J. Luigard, R. W. Poff, John Bewley, A. DeWitt, Birdsboro; H. C. Geissler, Harry Geissler, Samuel Geissler, Geo. Ritter, Geo. Haasinger, Wm. S. Rapp, Chas. B. Prizer, Charles Williamson, Robert Shick, E. Painter, John Hentzell, Chas. P. Hoffman, Adam Kolb, Henry Spice, Christian Geissler.

The committee consisted of Wm. T. Hain, Lewis Dauth and Harry E. Richards.

The officers of the Association for the ensuing year are: William H. Bitting, president; Charles Markley, vice-president; Harry E. Richards, secretary, and William T. Hain, treasurer.

United States Consul Lathrop, at Bristol, England, in a report to the Secretary of Agriculture gives some interesting information relating to the corn importing countries of Europe, from which it appears that eight countries imported during the fiscal year ended June 30, 1894, over 134,000,000 bushels of corn. Of this amount the United Kingdom took over 70,000,000, and Germany nearly 33,000,000 bushels; France took 10,500,000, and Holland and Austria Hungary each took 6,500,000; Belgium took nearly 5,000,000, and Denmark and Switzerland 1,750,000 bushels each. The bulk of the corn imports of Great Britain comes from the United States and Roumania, Russia, Canada and Turkey being drawn upon to make up about one-fourth of the supply. Nearly half the corn imported into Germany comes from the United States.

It is announced that the naval programme approved by the British Cabinet involves the construction, within the ensuing financial year, of four first-class, four second-class and two third-class cruisers, 20 torpedo boats and 20 torpedo boat destroyers. The cost of these vessels will aggregate about \$32,500,000.

STEAM AND HOT WATER.

Heating from a Coil.

From C. A. W., Chicago, Ill.—I would like to learn through *The Metal Worker* how to pipe a room for heating it with hot water to secure the best results. The room is located over a stove in which there is a large heating stove. I shall use the room, which is 18 x 22 feet with a 10½-foot ceiling, for a workshop, which will have a work bench extending all across the back end, which has a Western exposure. The proprietor wants to heat the shop from the coal stove, and thinks that a pipe can be run from a coil in the stove above the smoke pipe; then through the floor and up to the ceiling of the shop, so as to avoid a door which is in the shop. In returning to the stove it will connect with a pipe coil, as he does not wish to use a radiator, but he does not know what size pipe or how much of it to use. I have my doubts about it keeping the room warm, as it is in the west end of the building and the work benches have to be at the west end on an outside wall. The building is of brick and a stove pipe runs up to a chimney which stops at the ceiling of the shop.

Answer.—If the stove in question has sufficient heating capacity to heat the stove in which it is and the water that would be necessary to heat the shop, it seems as if there would be no difficulty in piping the job so as to give good results. Using the cubic rule in determining the amount of heating surface that would be required in the room, we find that about 140 square feet of radiating surface would be required. This is allowing 1 square foot of radiating surface to every 30 cubic feet of space. Owing to the large size of the radiator, it is probable that 1½-inch would be better in this case than 1-inch pipe, and in order to expose 138 square feet of surface 322 lineal feet of 1½ inch pipe would be necessary. The placing of this pipe might be either in a return bend coil or in a manifold coil, and in order to get this amount of pipe in a room it is probable that it would be necessary to have the coil extend across one end of the room and a few feet along each side. It is quite a common practice to place the radiating coil under the work bench, and no objection is made to it by the workmen. A heating coil placed in the stove has a superior heating surface and will take care of more square feet of radiation than is generally rated for a regular hot water heating apparatus, provided that the fire chamber is of ample size and a good fire is carried. Calculating on such conditions, 1 square foot of surface would be required in the heating coil in the stove for every 30 feet of radiation in the pipe coil in the shop, or about 5 square feet of surface. This would amount to

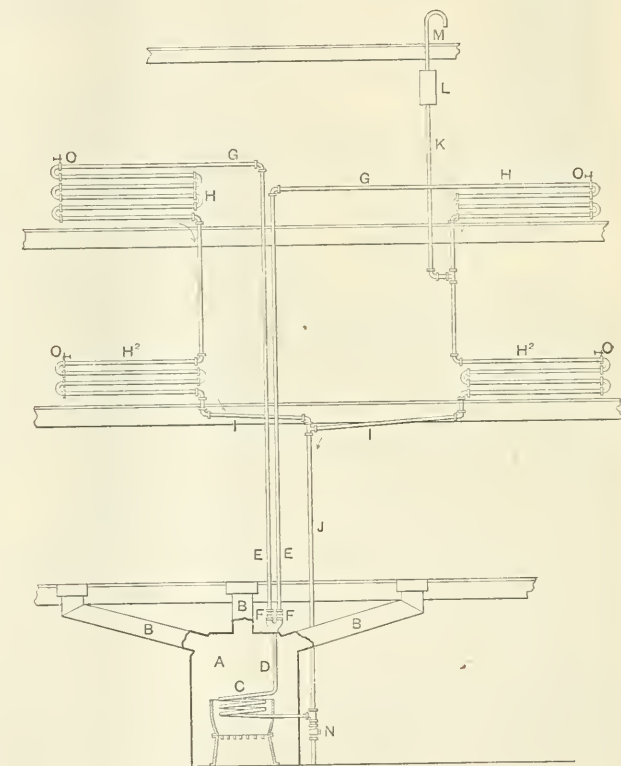
about 11½ lineal feet of 1½-inch pipe in the coil in the stove. This coil is preferably located just above the fire, so that it has the radiant heat of the fire and also the heat of the products of combustion. In piping the job the flow pipe from the coil in the stove should run with a positive ascent, so as to avoid air traps, to a point near the ceiling of the shop. Here should be placed an expansion tank, and when

always preserving a fall to the stove. Water in being heated expands one-twenty-third of its bulk, demanding more space, and in order to prevent the expansion tank overflowing it should be of ample size.

Combination Heating.—III.

BY J. W. HUGHES.

The question of furnace and the best form of coil or heater adapted to it be-



Combination Heating.—Fig. 11.—Piping of a Successful Job.

connected with the flow main at the highest point it will also serve as an air vent. The pipe from the flow main to the expansion tank need not be over ½ inch in size. From this point the flow main should drop to the radiating coil. In placing the radiating coil care should be taken to so grade it that any air that may be in it may escape up to the expansion tank. The return from the radiating coil may be run back to the stove and connected to the heating coil in the most convenient manner, but

ing decided, the fitter has next to consider the general plan or layout for the mains and branches to suit the different coils and radiators. As the buildings to be warmed differ in plan, so will the placing of the different pipes vary, and as long as the general principles controlling the circulation of water under the effects of heat are not violated the apparatus will work. But there is no doubt but that certain plans on a given job will work better than others. The main object to be kept in view is to so arrange the pipes as to allow of the greatest freedom of circulation. To this end undue friction must be avoided

by not having the pipes too small, and by avoiding too many and too sharp turns, and above all, the pipes must be so arranged as to allow of their being easily filled "solid"—that is, that there be no air pockets, a bubble of air in the mains or coils acting the same as a cut in a rope.

I have for a long time looked upon the circulation of water in pipes as being similar in principle to the pulling on a rope. There is no, or very little, push possible; it is nearly all pull, the pulling force being the difference in weight of the two columns. The weight in the return being greater than that in the flow pipe, on account of the expan-

in other words, break the continuity, and the motion is lost. You may pull part of it or push part of it, but the steady, even motion (circulation) is gone. A bubble of air in the pipes separates the water, and acts in the same manner as cutting the rope. In part of the system circulation may be maintained, being the same as working part of the severed rope, or the heat imparted to the coil may cause motion, but that is due to another powerful agency, steam, and it is no longer a quiet, continuous hot water circulation. Neither is it a regular working steam system, the presence of water in the return pipes preventing them working as

make of the hot air furnace, and the possibility of fitting a given sized coil or heater in it. The fact must not be lost sight of that in a building warmed with a combination apparatus, air from the furnace is the principal factor, the heat from the hot water circulation combined with it being a useful adjunct or assistant for warming certain portions of the building to which the hot air cannot gain access, or to increase the heat where the hot air would only be partially sufficient. For this reason the apparatus must, as far as possible, be designed to work as a harmonious whole, and valves on the coils should be avoided. If the house becomes too warm, the heat can easily be controlled by the agency of the different keys and check drafts with which all good furnaces are equipped. But to shut off a coil on a general circulation makes an immediate and serious disturbance that is apt to throw the circulation out of gear and cause the formation of steam, with the accompanying noise. And when the checking of the fire causes the condensation of the steam the pipes will no longer be solidly filled with water, and, as a result, there will be a poor circulation or none at all, and the whole work of exhausting the air will have to be gone over again.

The following proportions of heaters or coils in furnaces to the amount of heating coils or circulation in rooms are from actual jobs that worked well, and form part of a record kept in the effort to establish a proper ratio between the heating coil and the work it would do in a satisfactory manner. While no actual rule covering the whole question was ever made as a result of the record kept, yet the fact was established that there were limits above or below which it was not safe to go. Difference in strength of chimney draft, kind of fuel, construction of building, &c., were all important factors, constantly varying, that prevented anything like mathematical exactness in laying down a rule. There is one rule that is positive, and that is to provide for a perfectly free circulation. This will neutralize in nearly every case defects in proportioning the size of heater to coils, and while it will not make up for a shortage of heating surface intended to warm a given area, it will even help out wonderfully on that point:

Thirty feet of $1\frac{1}{2}$ inch spiral coil in dome of furnace with $1\frac{1}{2}$ inch flow and return and 1 inch and $\frac{3}{4}$ inch branches heated 1300 feet of 1 inch circulation coils; 11 feet $1\frac{1}{2}$ inch heater pipe did the same for 350 feet of $\frac{3}{4}$ -inch coils; 11 feet $1\frac{1}{2}$ -inch coil with $1\frac{1}{2}$ -inch flow and return and 1 inch branches took care of 260 feet of 1 inch circulation coils; 9 feet 6 inches of $1\frac{1}{2}$ inch heater coil with $1\frac{1}{2}$ inch flow and return mains and 1-inch branches to coils carried 240 feet of 1-inch circulation; 13 feet 7 inches of 1 inch coil with 1-inch flow and return branched off to 1-inch and $\frac{3}{4}$ inch supplied 550 feet of 1 inch coils; 12 feet 7 inches of same sizes to 325 feet was a success again; 12 feet of 1-inch to 320 feet of coils worked well; 11 feet 10 inches of 1-inch with same sizes for distribution carried 439 feet of coils; 14 feet 6 inches of 1 inch to 400 feet same size, and 13 feet 2 inches of $1\frac{1}{2}$ inch with $1\frac{1}{2}$ inch flow and return, 1-inch and $\frac{3}{4}$ inch distributing branches, to 490 feet of 1-inch coils gave good results.

Fig. 11 shows a method of piping that worked very successfully. A, hot air furnace; B B B, hot air pipes; C, heater coils; D, $1\frac{1}{2}$ -inch flow pipe divided by a

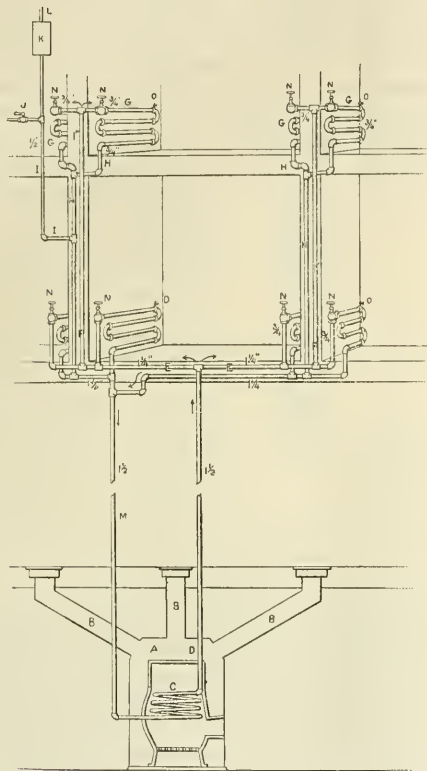


Fig. 12.—Pipes Arranged as in a Straight Hot Water Job.

sion of water through the application of heat in the flow pipe or column, and the consequent greater density, or weight, in the return, causes the water in the return to fall or gravitate toward the point where the disturbance of the equilibrium is taking place—viz., in the heater. As the water in the heater becomes hot it expands and becomes lighter than the unheated water, and by the agency of the law of gravitation ascends to the top by the rising main or flow pipe, the colder (denser, not heavier) water flowing in by the return. As long as the motive power (heat) is applied this goes on continuously; but as the difference in the weight of the two columns of water—viz., that in the flow and return mains—is very little, it takes very little to stop it. It can be compared to a rope over a wheel. As long as the rope is intact and power is applied to pull it the rope continues to revolve as a whole; but cut the rope, or,

proper steam returns. In making the foregoing statements I am aware that in some respects I differ from scientific writers on the subject of hot water circulation, but from a practical point of view it seems to act as described. Perhaps, scientifically, it should not; practically, to all appearances, it does. The lesson to be learned from this is to avoid everything that will prevent the pipes and coils from being solidly filled with water, and that will prevent the water from flowing freely in the direction in which it should go—that is, up from the heater when warmed, and back and down to it when cooled, or deprived of the heat that has been imparted to the air of the apartment to be heated.

In fitting the ordinary hot water apparatus it is possible to vary the sizes of the mains, both flow and return, and so proportion them to their work. The combination system is of necessity restricted in a greater or less degree by the size and

Y-pipe into two 1-inch flows, E E; F F, stop valves on flows E and E, not to shut off but to control and separate flow through the 1-inch flows E and E in case the water had a tendency to circulate more to one side than the other. These valves when once set were seldom afterward touched. G G, branches to top coils H H, through circulation coils H H and H² H², in the direction of the arrows, made the coils as far as circulation was concerned practically one; I I, 1-inch returns branched into main 1½ inch return J to furnace; K, ½ inch expansion pipe to tank L; M, open overflow pipe; N, water feed cock; O O O, air cocks.

Fig. 12 shows another arrangement permitting of valves being fitted on the coils, and the piping more nearly approaches the methods used in a straight hot water job than Fig. 11. It shows furnace A with hot air pipes B, heater coil C, 1½ inch rising main or flow D, which is branched at first floor into two 1½ inch pipes, E and E, from which are taken ¾ inch branches to supply the coil on first floor. These mains E E are again branched from for the 1-inch risers F F, which are carried up in partition to supply coils on top floor, where they are branched ¾ inch for the coil supplies, returning through the pipes H into the main return M. N shows the valves on the different coils; O, the air cocks; I, the ½ inch expansion pipe; J, feed cock supplied from some adjacent water pipe; K, tank; L, overflow. The method of dividing the flow and bringing back the return is clearly shown, the arrows giving the direction of movement of the water. The coils generally used were circulation coils, as shown, and were secured to the wall by straps and back plates, the coils being made with close straight bends—that is, without pitch—the object being to make them more compact. They were generally fitted above the baseboard, and sometimes box coils were used similar in construction to the ordinary box coil made for steam heating.

Loss of Heat and Radiation.

From H. T. G.—Please answer the following questions in *The Metal Worker*: 1. What number of heat units are lost per square foot per hour for a difference of one degree between the external and internal air by the external wall, a section of which is shown in the accompanying sketch?

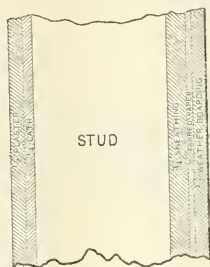
2. What number of heat units are emitted per square foot per hour by both direct and indirect radiators with the water and steam in the radiators at the following temperatures: 120, 140, 150, 160, 170, 180, 190, 200, 210, for water and 220, 230, 240, 250, 260, 270, 280, 290, 300 degrees for steam?

3. Would the same amount of heating surface be required to raise the temperature in a room on the third floor of a building to 70°, external air zero, as in the same sized room and under exactly the same conditions on the ground floor, all the building being heated?

Answer.—On pages 38 and 39 of *The Metal Worker* for October 1, 1892, Leicester Allen gave a rule for determining the transmission of heat through walls of buildings, and among examples illustrating the use and value of the rule he cites a case of a wall which may be considered, for all practical purposes, the same as that shown in our correspondent's sketch, and illustrates it in Fig. 2 on page 38 of the is-

sue named, which cut is reproduced herewith. He finds that the loss of heat through such a wall per hour for 1° of difference between inner and outer temperatures is the same for a surface of 2.6381 square feet as it would be through a square foot of glass under like conditions. The loss for a square foot of glass for a difference of 1° being 0.53 heat unit per hour, we find the loss through a square foot of the wall by dividing 0.53 by 2.6381, and the answer is 0.2009 of one heat unit. If the outside temperature were —10° F., and inside 70°, the total loss per square foot per hour would be 0.2009 multiplied by 80, or 16.072 heat units. This in a case where the outer surface radiates freely into space.

2. If the numbers given below for the amount of heat imparted from direct radiators at the temperatures named be divided by two the results will be



Some Questions in Heating.—Section of Wall.

practically near enough for indirect surface as ordinarily used, or where the air to be heated is not driven through them by the use of blowers. It must also be premised that there is a great difference in direct radiators in their power to impart heat. A radiator with three rows of loops or vertical tubes will not impart as much as one with two rows, and the latter will give out less than one having only a single row. There are also differences in heating capacity due to form of loops, and extended surface gives out less per square foot than plane surface. It is obviously too much of an undertaking to give figures at the different temperatures named by our correspondent for every variety of radiators in the market, and, besides, the experimental data for doing this are not obtainable. There are a great many radiators in the market that have not been accurately tested. Some sort of surface must therefore be assumed, and we will therefore figure for what is about the average for direct radiators with two rows of loops or tubes, 36 inches high, for surface, as rated by their manufacturers. Our correspondent gives the temperatures of the radiators, but does not give the temperature to be maintained in the rooms, but we suppose that this is to be 70°. This being the case, the average direct radiator of

the kind above named, when set with average skill, will, at 120°, give out about 90 heat units per hour for each square foot of rated surface; at 140°, 126 heat units; at 150°, 144 heat units; at 160°, 162 heat units; at 170°, 180 heat units; at 180°, 198 heat units; at 190°, 216 heat units; at 200°, 234 heat units; at 210°, 252 heat units; at 220°, 270 heat units; at 230°, 288 heat units; at 240°, 320 heat units; at 250°, 340 heat units; at 260°, 364 heat units; at 270°, 384 heat units; at 280°, 406 heat units; at 290°, 424 heat units, and at 300°, 440 heat units. As already said, these figures should be divided by two to get the amount imparted by indirect radiating surface in average practice. The figures are given from records of experiments, not with plain pipe surface, but with direct radiators in actual use.

3. There is quite a diversity in practice as to reduction of radiating surface for rooms of the same size on second, third, fourth and fifth floors. In some cases these rooms feel the effect of heat from rooms below more than in others. In cheaply built buildings, such as are most of our city flats, when all parts are heated the air warmed below rises through halls and floors more than in well constructed buildings with fewer stories; and in well built houses, where a large hall is kept constantly heated, the upper rooms will generally not require as much radiator surface as do heated rooms of the same size situated directly below them. In this, as with many other points in heating buildings, no hard and fast rule can be laid down, and the fitter must be guided by judgment and experience. It is quite common to allow a reduction of one-tenth for each successive upper floor if the rooms are large. Thus, if a square room on first floor requires 80 square feet, the next above, if of the same size, would need 72; the third floor, 64; the fourth, 56, and the fifth, 48 square feet; and in many cases this arrangement would work well, but in most cases, in well built buildings, a reduction of only 5 per cent. would be safer, especially where the superimposed rooms are so small that the one on the lower floor would require not more than 40 square feet.

THE CONTRACT for ventilating the new Reichstag buildings at Berlin, Germany, was intrusted to Daniel Grove, an English engineer, whose plans received the first prize in open competition. The amount of fresh air required is estimated at 200,000 cubic meters per hour. This estimate provides for a thorough change of air in the parliament chamber five times every hour during the sittings, and in the other parts of the house at such frequent intervals as is likely to be requisite. A uniform temperature of 68° F. will be maintained throughout the building, partly by hot air and partly by hot water pipes. Mr. Grove has also charge of the kitchen and sanitary arrangements, which are all of the most modern and improved type.

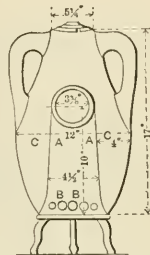
A Pipe Fitting Question.

From C. E., Worcester, N. Y.—I should like to have some information as to whether or not it would be practicable to take two pipes from one opening on a main in a hot water job. I give a sketch of the flow pipe, and wish to take a 1½-inch connection from the main at the point where it is reduced from 3 inches to 2 inches as marked, using a 3 x 2 x 1½ inch T at this point. I intend to use a 1½-inch nipple running into a T, which is to be bull headed, a 1-inch pipe running from each side. I intend to take a branch from one side of the T and lead it over to a coil, and from the other side I intend to run the pipe to a radiator. The question is, will such a method of taking off the branches secure good circulation?

Note.—We shall be glad to have some of our practical readers give us their opinions on this subject. The length of the mains leading from each side of a T so placed, the size of the radiators to be fed and the friction due to the method of piping all tend to secure a better cir-

should be very particular to give the fullest possible details and make a careful drawing. From the sketch it would seem that the pipe has not been run properly. All straight fittings, such as bullhead tees and elbows, should be avoided. I have never seen a job work properly with such fittings. The character of the boiler and its distance from the center of the building and the exposure of the building are also important. The mains mentioned look large enough to supply from 200 to 500 feet of radiation. A 1½ inch pipe will supply 125 square feet of steam radiation. The minimum size of main and return pipe for hot water heating is as follows: A 2 inch pipe will supply from 175 to 300 square feet of direct radiation, while a 1½-inch pipe will supply 100 square feet of direct radiation. This shows that the flow mains are plenty large enough to do the work. There are a great many men who undertake to do steam and hot water heating who have very little experience, and when they get in a tight place with a job that does not work they ask for help. I have worked on a number of jobs this year that had to be overhauled

found at Pompeii. The joints are of excellent construction, and show, as do also many well made surgical instruments, the high culture and skill of the mechanic of the first century. The boiler is furnished with a closely fitting lid, and the whole is supported on three legs of beautiful bronze figures. I have



A Pompeian Boiler.

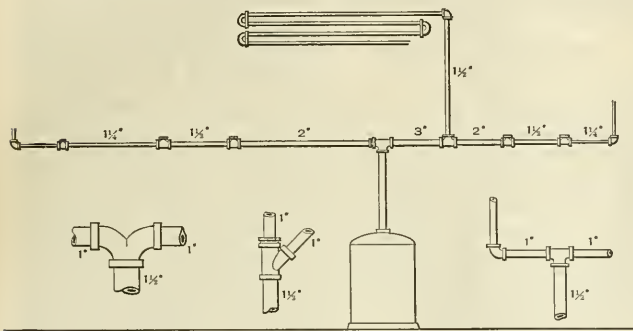
been led to write this description of this curious tubular boiler of Pompeii, as I believe that the great antiquity of the internal method of firing is not generally known.

Fire Caused by Radiator.

In a letter to *Fire and Water*, Philippe Douval, chief engineer of the fire department of Quebec, says: "Some few years ago a fire occurred in the Post Office Building in this city, and after investigating the matter very carefully, I came to the conclusion, and gave it as my opinion, that the fire was caused by a lot of canvas mail bags having been carelessly placed on a hot water heating pipe. This opinion was at the time questioned by some persons. Last week a fire developed itself in a house on St. Valier street, and it was found to have been caused by a hot water pipe which passed through the wooden ceiling and a defensing of sawdust. This incident will, I think, go far to establish the opinion I had at the time of the post office fire.

I have much pleasure in inclosing you a letter just received by me from Charles Barilarge, the civil engineer of this city, bearing on this subject.

Mr. Barilarge says as to dangers by fire from steam or hot water pipes, I have to remind you that it is only a few years ago, a fact of which I believe I informed you at the time, that, while I occupied house 54 St. Louis street, now tenanted by Dr. Beaupre, some light cotton children's underclothing laid on the radiators to dry in one of the upper stories was brought to me in astonishment by my wife, and found to be scorched absolutely, as if by an overheated smoothing iron. This was during soft weather, and therefore no cold, nothing to rob the heaters of their superabundant heat, due to a very hot fire at the time. This is a result which most persons are apt to doubt, and even disbelieve; the idea being that the heat of boiling water or ordinary steam—that is, steam produced under ordinary atmospheric pressure—can produce no such effect; and in truth such a temperature cannot do so, though in course of time even this will dry some woods to an extent to almost char them and reduce to the state of lignite, making them porous and of looser grain or fiber, and ready to take fire from the merest spark which under other circumstances would die out ere it had time to produce any



A Pipe Fitting Question.

culation from one side than from the other. If, instead of using a T, a twin ell, as shown in the engraving, is used for this purpose, less trouble is likely to result. A still better plan would be to use a Y for the two 1-inch outlets. This would divide the volume and insure a better circulation through both the coil and the regulator.

A Heating Problem.

From SAMUEL HEINS, Rondout, N. Y.—I notice in *The Metal Worker* of December 29 the article of "T. F. C.," with a diagram in which he asks the reason why one line of pipe works satisfactorily, while the other is a failure. It is pretty hard for any one to answer the question, because it is not stated whether steam or hot water is used. From the sketch it looks as if both of the flow pipes come direct from the top of the boiler, and it seems as if the pipe was complicated, so that there is little chance for a reader to discover just where the trouble is. A different character of drawing would have made the pipe plan more readily understood. There are several questions which if answered would render the solution more easy. The distance of the radiators from the boiler; whether the flow pipe runs straight up, and what character of radiator is used. When information is wanted the inquirer

by an expert to make them give satisfaction. In the past four years I have answered a great many questions and am of the opinion that inexperienced men would save money if they would study out the result that would follow their work before installing it.

A Pompeian Boiler.

Frederick J. Smith, writing from Naples to *Engineering*, describes the boiler here illustrated:

The water tube boiler in which the fire is applied externally is sometimes spoken of as a modern invention, and the internal fire box is considered by some to belong to the time of Watt. The boiler I am about to describe shows us that the principle of internal firing was known about 2000 years ago. Among other objects found at Pompeii was a boiler of sheet metal, probably copper, as shown below. Its form is similar externally to several vases of silver found at Pompeii, but internally it is furnished with a cylindrical fire box, A, A, surrounded by a water space, C, C. The fire box is curved at its upper end and terminated in the side of the vase. The lower end of the fire box is furnished with five fire bars, B, B; each bar consists of a tube in communication with the water space. The internal diameter of each tube is about ½ inch. The fuel used appears to have been charcoal, as fragments of it are to be seen in other heating vessels

effect. But the fact is that just as at an elevation above sea level, you cannot, owing to the decreased pressure of the atmosphere, get a cup of hot tea unless boiled in a close vessel, in the same way in these hot water plants, the temperature goes far beyond the supposed 212° F., due to the water being confined and under a pressure of more than 14½ pounds to the inch. In fact, in an ordinary one story house and attic with heater in the basement, and where the height to cistern or reservoir level may be 30 feet, the pressure will be two atmospheres, or 29 pounds, and the corresponding temperature of the water 256°, instead of only 212°. But in a three to four or five story house with attics, and heater in basement, the pressure on the water in the boiler will reach three atmospheres, and even four or more for greater altitudes, and temperatures increase to 274°, 292° and so on. Again, the overflow cistern or pipe leading to it will sometimes get out of order or choked or impeded in such a way that, though the height may not be greater the pressure may be enhanced to almost any extent, and the temperature rise to 500° or more and become capable of quickly charring the softer and resinous woods, thus robbing them of their oxygen, when on cooling again they take in oxygen so quick as to produce combustion or take fire.

HEATING NOTES.

JOHN McLEAN, formerly with the American Radiator Company, will travel in the Eastern States if the interest of W. A. Russell, manager of the New York house of the Detroit Lubricator Company, Detroit, Mich. Quick opening steam valves, hot water valves and a line of steam specialties will make his visits of interest to the trade.

OFFICIAL BULLETIN No 6 from the Master Steam and Hot Water Fitters' Association of the United States, issued from their headquarters in the Cable Building, New York, gives information on Association matters, and notes an increase in membership and an improved financial condition.

THE IDEAL BOILER COMPANY, 36 Dearborn street, Chicago, announce that they are now prepared to fill orders for all sizes of steam boilers. Quite a number of these boilers have been put in during the past fall and bear so well the test imposed upon them during the severe weather that has been experienced in the last few weeks that they push emphatically the claim that the Ideal steam boilers have no superior in the market.

THE COLORADO HEAT & FUEL SAVING COMPANY have filed articles of incorporation with the county clerk at Colorado Springs, Colo. The company is capitalized at \$10,000 and the incorporators are H. J. Foote, J. F. Terrence, W. B. Boardman and F. E. Van Duzen.

JOHN W. MILLS, 100 Lake street, Chicago, has resigned the second vice-presidency of the United States Heater Company, and will again enter the field as a steam and hot water contractor. A new company will be formed, which will be known as the John W. Mills Company, and will consist of John W. Mills, also J. R. Mills and Frederic Dillzer of the Chicago Heating Company, 40 North Clark street.

C. V. KELLOGG, treasurer and general manager of the American Boiler

Company, 84 Lake street, Chicago, has returned from an important business trip to Cincinnati and St. Louis.

THE ILLINOIS HEATING COMPANY, 88 Lake street, Chicago, have sold their right in the Cambridge self-cleaning boiler, which was patented by C. B. Thompson, to the J. H. McLain Company, Canton, Ohio, who will manufacture the boiler, both for steam and hot water.

THE NIAGARA RADIATOR COMPANY of Buffalo, N. Y., recently received orders from Switzerland for radiators.

THE FOWLER RADIATOR & MFG. COMPANY have removed their main office from Philadelphia to their works at Norristown, Pa., the change having been made on February 1. The company have elected a new Board of Managers for the years 1895-1896, as follows: President, A. H. Fowler; vice-president, J. R. Goehring; treasurer, John S. Waters; W. Barnhurst and S. B. Waters. The secretary of the company is C. R. Fowler, son of the president. We understand that business with the Fowler Radiator & Mfg. Company is good for this time of the year, they having some excellent orders. They particularly refer to the trade in their semi-direct radiators.

Manufacturers' Prudential Expenses.

A growing item of expense to manufacturers, says *The Iron Age*, is the apparent necessity of making special contributions to their customers or to interests allied with them. For instance, nearly every trade now has its State and national organizations, holding annual conventions. These conventions almost invariably carry with them some character of entertainment to be provided by the local members, who seek the assistance of manufacturers in bearing the expense. If local manufacturers are not sufficiently numerous or financially capable, no hesitation is felt in appealing to others some distance away. Manufacturers making a varied line of products are liable to be called on for contributions to the expenses of annual conventions in a number of trades. But the expenses do not always end with contributions of this character. In some trades the delegates do not hesitate to ask manufacturers to pay their personal expenses in attending conventions, because the local association is too poor to bear such a burden, but, nevertheless, desirous to be represented. Again, a railroad company will resolve upon some character of publication to advertise the road. It may be an illustrated work, descriptive of the beauties of the scenery or setting forth the magnificence of the company's equipment, or it may be a guide book, but, nevertheless, the expense of publication is expected to be saddled largely, if not wholly, on manufacturers of railroad supplies, whose cards are inserted in the form of advertisements. The name of a railroad company has been known to be used in assisting schemes for the publication of huge posters advertising the company, but with the cards of contributing manufacturers occupying a portion of the space to preserve the appearance of rendering a return for the money contributed. It is not strange that members of railroad labor organizations should follow the example thus set and appeal to the same manufacturers to purchase ball tickets or otherwise contribute to the support of railroad unions.

Another heavy item of expense is incurred in connection with catalogues issued by wholesale houses. These catalogues are often exceedingly creditable publications, being printed and bound in the best style of the bookmaker's art. They are profusely illustrated, and generally contain numerous cuts of the specialties of manufacturers in the several lines covered. As large editions of such catalogues are distributed, it is claimed by their compilers that the manufacturers derive great benefit from the illustrations of their goods, and this benefit is capable of being measured in dollars and cents. The contributions received from manufacturers for the service thus rendered are usually sufficient to cover the cost of printing a catalogue, and in some cases it is asserted that a handsome profit has been realized. Some wholesalers have been known to go even further than this, and to authorize enterprising bookmakers to get up books of a popular character for free distribution by the house, the cost of publication being defrayed by the insertion of cards from manufacturers, solicited for the purpose.

These and similar expenses are usually charged by manufacturers to "Advertising Expense." The result is that the advertising account is often swollen to heavy proportions. When balances are struck at the end of the year, and it is deemed advisable, especially in such times as these, to retrench expenses, the large advertising account attracts anxious attention. The flat goes forth that it must be cut down the coming year. On looking into the matter, the first channel of expenditure in advertising which is thought of is probably and very likely to be the trade paper. Disbursements on that account are ordered curtailed, and a great stroke of economy is thought to be accomplished when trade paper advertising is seriously cut down. Again there are numbers of manufacturers who recognize the value of trade papers as advertising media but who assert as a reason for not patronizing their columns that they are under such heavy expense for other forms of advertising that they cannot do so. Now we submit that it is not good policy to discard facilities for advertising which are acknowledged to be of the best character and carry with them no other consideration whatever than that of reaching the class of people sought. Those items of expense which are not for pure advertising should be placed in a separate account. Inasmuch as such expenses are incurred for prudential reasons, either to retain or secure some or all the trade of the parties to whom the payments are made, they should be charged to "Prudential Expense" or some other distinguishing title, separate and distinct from advertising. We do not impugn the motives of any person, nor do we attack the practice which has grown up in the several trades. Manufacturers have a right to expend their money wherever they think they will be benefited, and their customers have an equal right to secure whatever benefits they can from the commercial connection. But a distinction should be made between advertising for the sole purpose of reaching the largest possible number of people interested and expending money to influence the trade of one or at most a limited number of purchasers. Should such a distinction be made, we feel sure that the comparatively small amount paid out for actual advertising would be properly appreciated.

TIN PLATES.

The Tin Plate Settlement.

In less than five months from now the compromise tin plate scale adopted at Pittsburgh last month will have expired. Predictions are freely made that unless the tin plate manufacturers are granted further reductions in wages when the scale again comes up for settlement another conflict will take place. It is admitted that with the present low prices of billets those concerns who roll their own black plates and have modern equipped plants can realize a fair profit in the manufacture of tin plate and pay the compromise scale recently adopted. It is somewhat doubtful, however, whether billets will always be obtainable at \$15 and less, and it is claimed that if they advance \$1 per ton profits in the manufacture of tin plate will be wiped out. There is also another point to consider. The already large production of tin plates in this country, together with the tonnage that will be turned out in the near future by the many plants now under erection, makes it reasonably certain that before a great while we will be able to supply the home demand and considerably more. In this event the ruinous competition that has so long prevailed in other branches of the iron industry will extend to tin plate and wages will necessarily suffer. A Western manufacturer who has a well equipped plant and who is now operating under the compromise scale, states that with the present selling price of tin plate his profit is but 8 cents a box. He further states that a slight decline in selling prices or a moderate advance in billets will wipe out this small margin altogether.

When the situation has been carefully considered from all points of view, it would seem that wages in tin plate mills can be held at the present standard only for a time and must give way to some extent when the conditions now confronting the industry have arrived.

SCRAP.

THE MONONGAHELA TIN PLATE COMPANY, Pittsburgh, Pa., started some of their mills on Monday. The present equipment of the works, which are located in the Oliver Iron & Steel Company's old steel mill, is nine tin mills, employing about 500 skilled workmen. It is stated that the company are intending to add eight more mills, making 17 in all, which will make their plant one of the most important in the United States.

THE ATLANTA STEEL & TIN PLATE COMPANY, Atlanta, Ind., are about to light their plant with electricity. The company at present use natural gas for lighting purposes, which costs them nothing, being obtained from their own territory; but they think the electric light is so much better as an illuminant that it will be economy to adopt it. They have also under consideration a proposition from a number of business people of Atlanta to contract for electric lights if the company will put in a plant of sufficient capacity to light a portion of the town.

As MENTIONED last week, the American Tin Plate Company, Elwood, Ind., started up with the four new mills which have been recently completed. This addition provides work for about 200 more men. They have at present nine tin mills in operation, with about 750 men, and are turning out about 7500 boxes of finished tin plates weekly. A tenth mill is in course of construction, which will be in operation in a few weeks' time.

THE CUMBERLAND STEEL & TIN PLATE COMPANY, Cumberland, Md., have resumed operations, with a good volume of orders for black plates.

IT IS REPORTED that the Blairsville Rolling Mill & Tin Plate Company, Blairsville, Pa., have made a proposition to the Amalgamated Association to pay the compromise scale rate, but without signing the scale.

WE ARE advised by the Britton Rolling Mill Company, Cleveland, Ohio, that their black plate mills are in successful operation and that the new tin-ning house will be running by March 1.

THE LICKING ROLLING MILL COMPANY, Covington, Ky., are reported to have signed the tin plate scale of the Amalgamated Association.

THE LLOYD - BOOTH COMPANY, Youngstown, Ohio, have received an order for finishing machinery from the Beaver Tin Plate Company, New Lisbon, Ohio.

A PROPOSAL to raise the price of tin plates by a combination of the Welsh manufacturers, which was recently put forth by Mr. Daniel of the Cromfein Works, seems to have fallen flat. It is generally recognized on the other side that, with the growing capacity for production of tin plates on this side of the water, any such policy would be suicidal.

THE SITUATION in the Welsh tin plate trade appears to be getting desperate. A London cable dispatch of the 6th inst. informs us that no less than 180 mills are idle, but that the Tin Platers' Union prefers complete stoppage to any further reduction in wages. The latest issue of the London *Iron and Steel Trades Journal* to hand reports the position of affairs in South Wales as serious. At present prices it is a matter of indifference to the makers whether they work or play. Orders are scarce and those received are not sufficiently attractive to induce the manufacturers to make special efforts to meet them. The prospects of the striking workmen are not, therefore, by any means bright for re-employment in the near future.

THE TIN MILLS of the *Ætna Standard Iron & Steel Company*, Bridgeport, Ohio, which have been closed since October of last year, were put in operation this week on the compromise scale agreed upon between certain tin plate manufacturers and the Amalgamated Association. This firm decided last year to change four of their sheet mills to tin mills, but on account of labor complications the work was not pushed. Recently, however, good progress has

been made toward fitting these mills for rolling black plates, and the firm expect to have them in operation early in March.

THE ILLINOIS STEEL COMPANY of Chicago emphatically deny the report, emanating from Pittsburgh, that they intend to build a large tin plate plant. The report stated that the company would erect a huge establishment, comprising no less than 30 black plate mills.

A MEMBER of one of the largest tin plate and metal houses in New York City, who is an acute and accurate observer, has just returned from an extended business tour, which embraced a number of the Western, Middle and Southern States, and has brought back with him the conviction that the country in general was never in a more favorable condition for a solid revival of business than it is at the present moment. Stocks are everywhere at the lowest possible ebb. Prices are at the bottom figure. There is much money waiting investment: and there is, moreover, a growing sentiment among consumers that the time is ripe to replenish their depleted stocks. Only one thing hinders, and that is the currency uncertainty. If the legislators at Washington would settle this matter, he is confident that an extraordinary impetus would be given to business in general and to the tin plate and metal trades in particular. As it is the general public is waiting from day to day to see what their representatives at the national capital are going to do to get the Treasury out of its hole, and until confidence is restored in this matter the wheels of the chariot of prosperity will still tarry. The individual above quoted describes the sentiment of business men throughout the country at the backing and filling methods of the law makers at Washington as one of exasperation.

PHILIPS, DODGE & Co., 11 Cliff street, New York City, announce that they have been appointed sole selling agents for the products of the New Castle Steel & Tin Plate Company, New Castle, Pa. The latter concern are about to largely increase their capacity for the production of tin andterne and black plates.

FROM the point of view of the workmen, president Garland of the Amalgamated Association expresses to the Pittsburgh *Dispatch* his satisfaction at the present situation in the American tin plate industry. Only three mills in the country, he says, are now running non-union, namely, the United States Tin Plate Company, Demmer, Pa.; the St. Louis Stamping Company, St. Louis, Mo., and Wallace, Banfield & Co., Irondale, Ohio.

THE Southern canning industry begins to show signs of a revival of activity. Ten of the leading canning factories in Baltimore, which have been idle since October 1, started into operation again on Monday, and others are likely to follow suit.

PLUMBING and GAS FITTING.

Day Classes at the New York Trade School.

The class in plumbing at the New York Trade School this year is making rapid progress, some of the members having already passed on all of the work in the regular course. The superintendent, John Delehanty, has added some work to the course that was never required of the pupils until this year, which makes the progress all the more remarkable.

The lead burning class, which is made up of pupils from the plumbing class, contains over 50 members, the largest in the history of the school. This class has been divided into sections, and some sections have already received their final instructions and have examples of very fine work on exhibition. The instructor, T. B. Walmsley, has added a new method to the course this year, which is the use of a compound blow pipe with illuminating gas. This system is easily mastered after the regular system with a machine has been learned and is of wide practical use, as the plumber can always get gas, and with the blow pipe traps can be lengthened and waste pipes joined quickly and neatly.

The steam and hot water fitting class can show some fine pipe work, and under the instruction of Chas. Coolidge are rapidly becoming fitters whose work will bear critical inspection. An examination of their technical progress was recently held, and resulted satisfactorily to Thomas E. McNeill, who lectures on Tuesday and Friday of each week on a special set of questions which he has prepared. The practical and scientific instruction given in this course is calculated to make it one of the most valuable of the trades taught at the school.

Next year an effort will be made to secure a sufficient number to start the class in tin roofing, cornice and sheet metal work, and the course of instruction laid out for the class which failed to fill this year is being further perfected.

Willimantic Master Plumbers.

The master plumbers of Willimantic, Conn., have formed an association with the following members: William Vanderman, C. L. Clark, H. H. Lyman, Moriarty & Rafferty; J. J. Fay and Chamberlain's Plumbing Company. The objects of the association, in addition to becoming members of the State Association of Master Plumbers, will be a mutual effort to improve methods connected with the business. The organization will use its influence to have a

plumbers' ordinance passed. There were present at the meeting James Ahern of Hartford, F. C. Weisart of New Britain and John S. Craig of Hartford. The local association elected the following officers:

President, William Vanderman.
Vice-President, Charles L. Clark.
Secretary, Frank P. Rafferty.
Treasurer, Hollis H. Lyman.

Chicago Master Plumbers.

The members of the Chicago Master Plumbers' Association and a goodly number of their friends from neighboring towns and cities spent a most enjoyable evening on the 30th ult. The occasion was the annual reception and ball of the association. It was held in the banquet hall of the Auditorium, and was a decided success in every way. The new president, P. M. Murphy, opened the exercises with a neat speech of welcome, in which pleasant sentiments were gracefully expressed, finishing his address by presenting Paul Redieske, the late president, with a handsome jewel as a token of the esteem in which he is held by his colleagues of the association. An appropriate response was made by Mr. Redieske. George Herbert then favored the assemblage with a song, after which ex-president Robert Griffith made an able address, taking the place of Health Commissioner Reynolds, who was unavoidably absent. The Latona Club, an orchestral organization, partly composed of plumbers, then rendered a fine selection, after which Scotch dances were given by Miss Maud Gordon, a piano and violin solo by Miss Lily and Master Mandable, children of M. L. Mandable, and a character song by W. W. Murray, who also read an original poem. Dancing then followed, the grand march being led by Mr. and Mrs. P. M. Murphy and Mr. and Mrs. M. L. Mandable. The arrangements were of the most satisfactory character and nothing was overlooked that could contribute to the pleasure of those present.

A Live Wire and Plumbing.

In Philadelphia last week, according to newspaper report, a live wire from the trolley system broke and came in contact with an awning post and distributed the current in different directions. One current melted the lead service pipe to the building to which the awning post was attached and a flooded cellar resulted. The tin conductor on the next house was so melted at the joints that it fell on the pavement. The current then skipped past two houses, and a woman drawing water in the bathroom of the third was surprised to see a blue blaze issue from the pipes. She threw water on the flame and that, making a conductor, she received a severe shock, while the faucets were melted from the lead pipe. The employees of the trolley company were summoned and dammed the current while a plumber was employed to dam the flood. It is not known whether the morality of the damaged was sufficient to dam their wrath.

Municipal Cleansing and Public Health.

The February number of *The Engineering Magazine* contains a valuable article by Geo. E. Waring, Jr., from which we quote the introductory portion:

It is not yet known exactly how the accumulation of filth in a town favors epidemics of disease, nor is it necessary to discuss this here; for, while there are numerous examples of long continued immunity from disease amid most filthy surroundings, there are records of a great many fatal outbreaks by which communities so situated have been suddenly devastated.

There is an almost unbroken record of the final disappearance of oft recurring epidemics and a steady improvement of the public health following the draining and cleansing of filthy towns and the supply of good water.

It is usual to measure the health of a community by the death rate. The true measure would be the health rate. There may be a vast amount of sickness, and of costly disability, with a very low death rate; but a high health rate is an unflinching index of good sanitary conditions, and it insures a low death rate as a matter of course. It is probably safe always to say that, while man may so far withstand the influence of filth as not to die from its effect, the public health—the vigor, efficiency, comfort and happiness of the people—is likely to be grievously lowered by it.

It is a fundamental principle of municipal economy that what leads to health leads to wealth. Yet there is no other self-evident proposition to which public sentiment is so indifferent. Nothing is easier than to awaken popular interest in a new city hall, a brick pavement, or a new fire engine house, and nothing is more difficult than to raise it to the paying point in favor of good drainage, clean streets and enforced sanitary regulations. It often requires the stimulus of a fatal epidemic—a sharp, quick and repeated stroke of death—to loosen the public purse-strings in the interest of the public health. Sometimes even this is of little avail, and we have to await the influence of a great popular panic of dread, as of cholera or yellow fever. The cholera scare of 1892, when one enthusiastic newspaper doctor said, "The cholera germ is actually thundering at the gates of New York," did more good to the crowded tenement house districts of that filth ridden city in a few weeks than had been accomplished during years of indifference. The first case of yellow fever at Brunswick in 1893 frightened its people to flight, and instituted a heartless "shot gun quarantine" throughout the whole region into which they fled. During the whole season there were fewer than 60 deaths, and most of these were believed by experts to have resulted from perennial "malarial fever," which is always very fatal along that coast. As a result, Brunswick is now being sewered in the most effective way, and sanitary

regulations are being enforced which, with the improved drainage, will save more lives every year than have been lost through yellow fever in any ten years, to say nothing of the reduction of sickness from minor malarial diseases, which have constantly sapped the vigor of the people.

The dread of yellow fever is not unnatural, for its devastations in Boston, New London, New Haven, New York, Philadelphia, and most of the larger Southern cities have been terrific. The improvement of health conditions seems now to have driven it into the southeastern corner of the country. Memphis was reclaimed after its very fatal epidemic of 1878-9. New Orleans was first fenced in by a quarantine which has at least coincided with immunity from yellow fever, and it is now being sewered.

It is safe to say that there are more deaths in the United States every year from distinctly "preventable" diseases, which are always with us, than have been caused by yellow fever and cholera together in all the 30 years since the war. Yet we take these deaths as a matter of course, and we pay no official regard to the 20 cases of disabling and painful illness that each death is estimated to represent.

Let us take, as a concrete example, the case of a town that has only 12 deaths from typhoid fever in a year. This disease can be entirely extinguished. Every death from it is an unnecessary death—as much so as a death from small-pox. The town in question therefore suffers, monthly, the private execution of one of its unoffending citizens, in expiation of a crime that may be partly its own and partly its neighbor's. The people accept this execution as calmly as they would accept a monthly death from old age. They go on electing the usual city officials and voting money liberally for pavements and new fire apparatus; but they leave the care of the public health to agencies that were considered adequate at a time when we still supposed that the question of life and death was in the hands of God and was to be determined largely by prayer. We now know that in this case, as in so many others, "*laborare est orare*," but, while we may trust less to prayer than we formerly did, we are still slow in effective labor.

While great advances have been made in sanitary knowledge and practice in a few towns and among a limited class of the people, when we come to consider the 12,000,000 inhabitants of towns of more than 1000 and not more than 25,000 population, we find that, as a rule, sanitary improvement hardly exists. With the great majority of these towns the beginning of the sanitary impulse, beyond the occasional influence of a striking epidemic or the fear of an impending epidemic, has hardly yet been felt.

THE J. L. MOTT IRON WORKS, New York, are developing considerable trade in their gas furnace pot for melting metals. This has been found very convenient in printing establishments for melting their stereotype metal. It is made in three sizes capable of melting 250, 500 or 1000 pounds. The burner is arranged in the larger sizes in 11 sections, each section consuming from 15 to 25 feet of gas, as it is regulated. With six sections in operation and replenishing as the material melted, 1500 pounds of metal have been melted in three-quarters of an hour. Manu-

facturers who use large quantities of molten metal in their work will find this apparatus very convenient, particularly where it is not desired to run furnace continuously.

Connecticut State Plumbers.

The fifth annual convention of the Connecticut State Association of Master Plumbers was called to order at Waterbury, Conn., by President James Ahern, at 9.30 a.m. Wednesday, in a handsomely decorated hall. The president introduced Thomas D. Barlow of Waterbury, who made an address of welcome and introduced the Mayor of the city. The Mayor stated that he sympathized with the plumbers in the attempts at humor at their expense, and congratulated them on being always ready to afford prompt relief in times of need. He called attention to the new water supply of the city and extended the courtesy of the city during their stay. President Ahern returned the thanks of the association for the courtesies extended. The Credential Committee was then appointed, and a recess was taken until its report was made. The committee reported favorably on 13 new members.

After appointing the Auditing Committee the roll was called, and among those present were:

J. C. Howland.
James Ahern.
S. E. Dibble.
R. H. Stohart.
J. S. Craig.
A. J. Clerkin.
Wm. Vanderman.
F. A. Curtis.
Geo. Agard.
H. A. Despar, Worcester, Mass.
John Mitchell, President National Association Master Plumbers.
W. E. Crosby, National Executive Clerk.
A. Troland.
Major H. B. Middlebrook.
L. H. Mills.
Geo. E. Schofield.
Thomas Logan.
A. L. Brown.
C. H. Belfield.
C. S. Eames.
F. C. Booth.
J. M. Page.
D. L. Yarrington.
R. B. Chamberlain.
Edward A. Fuller.
James Donovan.
Geo. D. Buck.
F. J. Reynolds.
H. H. Goodale.
Thomas Oakes.
N. B. Bull.
E. B. Smith.
N. R. Bailey.
S. H. Beard.
H. A. Beaton.
Geo. Leckler.
J. D. Eldridge.

G. W. Hazel.
J. Monahan.
A. D. Sykes.
W. H. Marston.
Thomas Barlow.
Geo. W. Minor.
Robert Morgan.
D. A. Curtis.
John Mulligan.
J. B. Weiant.
J. Murray.
P. J. Tierney.

President Ahern then introduced John Mitchell, president of the National Association of Master Plumbers, who made an interesting address on the success and advantages of organization and the interests of the plumber, which was received with frequent applause. He spoke of the objection to the camp follower at the national convention, whose influence and behavior were discreditable, and stated that a welcome and a warm one would be tendered to the representative honorable business men who came to the convention to partake of its benefits.

A vote of thanks was tendered President Mitchell for honoring the Connecticut State Association by his presence. A letter was read from L. B. Cross regretting that he could not accept the invitation to attend. Letters were also read from John Trainor, Baltimore; D. G. Finnerty, Boston; W. E. Goodman, Milwaukee, and H. J. Pattison, New York, and an invitation was received from Randolph & Clowes to visit their works. The Executive Committee reported that several meetings had been held and the affairs of the association were in good condition, and that a bill had been framed and was now before the State Legislature.

The reports from the other committees were read and accepted. S. E. Dibble read a paper on apprenticeship, which we print in full elsewhere.

H. A. Despar, Worcester, Mass., was introduced by the president, who stated that Mr. Despar had given excellent assistance to the Legislative Committee by furnishing them specimens of defective plumbing and traps to exhibit before the Legislature to aid in securing the passage of the bill now before it.

The report of the retiring officers was then read, in which the death of Alfred Hopkins was alluded to as a great loss to the association and the trade. Thanks were given to those who had assisted the officers in their work.

R. H. Stohart stated that as Alfred Hopkins had been one of the oldest, ablest and most enthusiastic plumbers, he moved that a committee be appointed to draft resolutions to be submitted to the association and after being passed to be sent to the family of the deceased.

The convention then went into executive session. After adjourning the executive session an election was held, when the following officers were selected for the ensuing year:

President, J. B. Weiant.
First vice-president, C. S. Eames.
Second vice-president, A. J. Clerkin.
Corresponding secretary, George Rapelye.
Treasurer, John S. Craig.
Financial secretary, R. H. Stohart.
Delegates to national convention, J. B. Weiant, L. H. Mills and William Vanderman.
Alternates, F. J. Reynolds and J. Donovan.
A vote of thanks was tendered the master plumbers of Waterbury for their

hospitality, and also to the retiring officers for their excellent service.

Middletown was selected as the place for holding the next convention.

The convention then adjourned to a banquet at the Scovill House. After disposing of an elaborate *menu* speeches were made by Mayor Kilduff, John Mitchell, president of the National Association of Master Plumbers, and J. B. Weisant. Not the least enjoyable feature was a quartet, singing "Love's Old Song" and "Maiden, Wilt Thou Dance?" James Ahern alluded to the Waterbury watch and the Brown boiler as spreading Waterbury's fame. P. J. Tierney of Rhode Island, M. J. Daly, H. A. Despar and Robert Morgan also spoke, after which the plumbers dispersed with pleasant recollections of the hospitality of the Waterbury plumbers and the value of association.

The Trade.

Peck Bros. & Co., New Haven, were represented by Irving B. Hotchkiss, A. J. Purdue and S. D. Baker.

Randolph & Clowes, Waterbury, by F. H. Hoffman, Frank J. Rourke and Thomas M. Hadley.

F. J. Knox, Hartford, by Dwight W. Knox and L. M. Dyer.

Henry McShane Mfg. Company, by R. H. Maguire.

The Momeyer & Story Company, New York, by N. D. Merwin.

E. S. Wheeler & Co., New Haven, by W. E. Morgan and E. W. Hotchkiss.

C. S. Mercer & Co., New Haven, by R. S. Woodruff.

Hopson & Chapin Mfg. Company, New London, by W. S. Hopson.

The Stamford Foundry Company, Stamford, by S. H. Plumb.

The Richmond Stove Company, by B. Mallory.

The New York Central Iron Works, by D. G. Richardson.

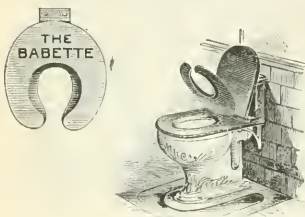
The Ideal Boiler Company, Boston, by Herbert E. Jones.

Randolph & Clowes, Waterbury, had a fine display of plumbers' goods in the convention hall.

The convention hall decorations were arranged by T. H. Bolger, State vice-president of the Journeymen Plumbers' Association.

Babette Seat.

The Babette Company, Dieston Building, Philadelphia, are putting on the market the child's closet seat shown in



The Babette Seat.

the accompanying illustration. It is made of stamped steel, the hinge being of brass, riveted to the plate. Its construction allows of its being easily adjusted to any closet seat, and the fact that there is room for such an article in nearly every household should insure for it a good sale. It is heavily lacquered to represent oak, and is both strong and durable.

Apprenticeship.*

BY S. E. DIBBLE, NEW HAVEN, CONN.

I do not propose to give any history pertaining to this subject, but there are a few matters in connection with it to which I desire to refer. As you all know, this system formerly involved the binding out, by their parents, guardians, or other proper authority, by contract, minor children for a term of years, for the purpose of being instructed in the art or trade they professed. The old English law required a service of seven years to learn a trade, but in Connecticut no time was limited. The result was that in England a much longer time was required than was necessary in many cases, while in this country insufficient time and the lack of proper regulations have oftentimes opened the door to and subjected us to the inconvenience of unskilled mechanics. As a system apprenticeship has passed away, and there seems very little encouragement for its revival. When the master mechanic ceased to work with his apprentices, not only were the boys deprived of the personal care of their masters, but the workshop itself ceased to be a place in which trades could be thoroughly acquired, and the boys were too often kept at work which they can do to the best advantage of their masters, or even to the best advantage of themselves, without, however, learning their trade in all its various branches.

In my own experience, I am frequently requested by fathers to take their sons as apprentices and teach them the trade. Such requests are frequently accompanied with offers of payment, and when so accompanied I have always positively refused to entertain them, on the ground that a boy working without pay lacks a necessary element to ambition; for weekly pay, though small, stimulates him to do better work, and helps, I believe, to make him a better man. There should always be a thorough understanding with the parents of all boys being taught in this way, as well as with the boy himself, upon all the points which may enter into such an arrangement, such as time, services, pay, &c. I think that we do not sufficiently encourage our boys to learn our trades, whatever those trades may be, and this, in my judgment, is a great mistake.

If the master plumber is no longer able to give his apprentice his personal attention, and the benefit of a personal contact with him—his time being more profitably spent either in his office or in some place outside of the workshop—some other system than that which many of us knew in our younger days must be substituted. This substitute seems to be afforded in the trade schools, where trades are taught the youth of our land as the professions are taught in the professional schools. The modern trade school is not altogether an untried venture. The industrial schools of France are not new, and have contributed much to the wealth and prosperity of that people. England spends large amounts of money in establishing and maintaining similar schools, where young men can learn what the workshop does not teach, and what a thorough and successful application of the laws of sanitary science require. The practical man, be he a master mechanic or a journeyman, may say that it is not possible to teach in any school sufficient to equip a man for

first-class work. This, to a considerable extent, is true, and is recognized in the professions. Experience in a lawyer's office, for a law student, or in a hospital, for a medical student, are essential accompaniments to the studying, which the schools afford, to make the most successful lawyer or doctor. And so it seems to me it may be in the trades. A boy in a trade school is not expected to completely prepare himself in all details, but it teaches him the laws on which a trade should be based, and by which it is, to a large extent, governed. This feature is, I think, oftentimes in danger of being forgotten, and it seems to me that in these days it is the combination of the trade school and the workshop that will produce the best results; the trade school to teach boys how to work, and the workshop to enable them to perfect, by experience, what they first have learned.

This matter of regulating and governing our boys is an important one, more important than many of us think. It is the foundation on which the future success of our trade largely depends. This raises the inquiry, Are we doing what we can to make the plumber of the future a master plumber? Are we making him as competent and skillful as we ought to, so that when he comes before the world to care for the interests which will be his he will be able to successfully promote those interests to his own advantage and the advantage of those whom he serves? The workmen of the future should be better workmen than we are. This I say without any disrespect to any member of our association or to any plumber, be he master or journeyman, throughout the land, for it is only by improving each successive generation of workmen in any calling that the welfare of that calling can be promoted. I see no reason why our boys should not be educated, but every reason why they should be educated thoroughly. Suitable boys or young men should be selected in the first place, and then they should be carefully taught the trade in all its thoroughness and detail. Whether it is advantageous to return to the old system of indenture may be a doubtful question, but I think that no boy should be permitted to perform the duties which his trade may thrust upon him until he has served a term of years in the workshop—five, for example—beginning, perhaps, at the age of 16, with a rebate of from one to two years if he is a graduate of a trade school.

I would close by referring in this connection to the apprenticeship system now in vogue in Chicago. Under this system each employer returns to the Master Plumbers' Association a list of those working for him as apprentices, with the date when they began so to work, their ages and their places of residence. All this is recorded by some proper officer, who issues a card to the employer, to be kept so long as the apprentice works for him. When the apprentice ceases to work for him the employer makes an entry of that fact upon the card and returns the same to the association. The apprentice also receives a card from the association which passes as a voucher of his standing, and which, whenever he changes his boss, is properly filled in with the date of such change, &c., until his certificate shows that he has served the proper time. The result is that a complete record is kept of all apprentices, their fitness, residence and such other details as may be of use to employers. The period of time covered by the apprenticeship is five years.

* Read at the Waterbury meeting of the Connecticut State Association of Master Plumbers.

TRAPS AND VENTS.

IT IS REPORTED that on February 1 the Sanitary Potters' Association, which was formed in 1890, was formally dissolved by mutual consent, and the \$500 posted as a forfeit by each of the 13 sanitary potteries interested was returned to the depositors. The association comprised the ten sanitary potteries in Trenton and one each in Bordentown, Baltimore and Tiffin.

AUDITOR-GENERAL [GREGG, Philadelphia, will appeal from Judge Bregy's recent decision that Plumber John Gormley was exempt as a manufacturer and not a dealer. The question in dispute involves between 700 and 800 persons, and means a loss or gain to the city of between \$10,000 and \$12,000.

A REPORT to the Board of Health of Philadelphia finds many school buildings in an unsanitary condition.

J. M. BUTLER & SON are a new plumbing firm, in Suffolk, Va.

PLUMBER: "I want to see the tank, mum."

Lady of the Flat (snappishly): "Well, he ain't here; and what's more, I don't expect him before 2 or 3 in the morning."—*Exchange*.

THE L. J. TOWLE COMPANY, Boston, Mass., had a fire in their plumbing supply house last week.

SMITH & WOODHALL, plumbers and tinmiths, Southbridge, Mass., have dissolved copartnership by mutual consent. Mr. Smith will continue the business.

PATRICK J. OWENS, a well-known plumber of Roxbury, Mass., died at his residence, 65 Palmer street, last Sunday night, after a long illness.

A RESOLUTION was adopted at the Sanitary Convention held at Harrisburg, Pa., last week, recommending the Legislature to pass a bill to offer a prize of \$25,000 to the discoverer of the best method for the disposal of sewage by precipitation, filtration or otherwise in a solid mass so that it may be returned as fertilizer to the land.

THE KING MFG. COMPANY, West Troy, N. Y., have been incorporated by the Secretary of State to manufacture and sell the King waste water trap and other plumbing and hardware specialties. The capital is \$15,000 and the directors are: Fayette B. Durant, John H. King of West Troy, and Howard A. Lansing of Menands.

A BILL to control and regulate plumbers and plumbing is to be introduced in the Legislature of Rhode Island.

MICHAEL DRISCOLL has associated with him as a partner in the plumbing and hardware business at Cazenovia, N. Y., Floyd P. Marshall. The new firm will be known as Driscoll & Marshall, and dates back to the dissolution of the firm of Collins & Driscoll, December 15.

A MODERN PLUMBING LAW is before the legislature of Delaware.

THE PLUMBING FIRM of Beck & Keith, Winston, N. C., have been dissolved.

THE PARTNERSHIP heretofore existing between John D. Swinton, Samuel S. Van Ethen, David L. Swinton and John D. Swinton, Jr., under the firm name of Swinton, Van Ethen & Co., Portchester, N. Y., was dissolved on January 21. The business of general hardware,

steam heating, plumbing and stove manufacture is to be continued by the firm of Swinton & Co., comprising John D. Swinton, David L. Swinton and John D. Swinton, Jr.

THE SHUSTER FOUNDRY COMPANY, South Pittsburgh, Tenn., will, it is reported, double the capacity of their pipe foundry.

A SANITARY MEASURE which the plumbers throughout the country will approve has been adopted in Chicago. In a school in the thickly settled districts and among the poorer classes a complete bathroom has been fitted up, and the grimy urchins from the district are given a bath by a woman who has been specially hired for this laundry work. It is stated that as many as 30 of the dirty youngsters have been scrubbed in a day, and that beneficial results have attended the work. A proposition to extend the bathroom to other schools in the densely populated districts is now receiving favorable consideration at the hands of the Board of Education.

THE Massachusetts Association of Master Plumbers held their annual meeting in Boston next Tuesday.

JAMES H. EVSTIS, representing the Walworth Mfg. Company, Boston, was one of the visitors at the Plumbers' Convention at Waterbury, Conn.

AT A RECENT MEETING of the Bridgeport, Conn., Master Plumbers' Association the following officers were elected for the ensuing year: President, Geo. E. Schofield; first vice-president, Major H. B. Middlebrook; second vice-president, Theodore Fox; treasurer, L. H. Mills; secretary, C. T. Eames; financial secretary, Thomas Logan.

Geo. H. CLOWES of Randolph & Clowes, Waterbury, Conn., is about combining business with pleasure in making an easy tour through the South and West in the interest of seamless drawn brass and copper tubing and sheet brass and copper.

THE AHERNS & OTT MFG. COMPANY, Louisville, Ky., have issued a circular in a three-color effect devoted to their enameled soil pipe and fittings, which are tested to 50 pounds water pressure. Attention is called to their smoothness, securing a perfect flushing, their non-absorbent and non-corrosive qualities, and to the claim that they can be used in an ordinary house with but a small advance in cost over tarred pipe.

F. B. WOODS, Everett, Mass., has lately purchased the plumbing stock and good will of Geo. W. Plaisted, and is about to open a shop on Chelsea street.

THE NEW BUILDING that is being erected by Disley & Weyand, at Waterbury, Conn., for their plumbing, sheet metal, cornice and skylight business is well advanced. It is to have a sheet metal front, which is already making a fine show. Progress on this building is being delayed by their press of work for their customers.

DR. JAMES CAMPBELL, P. J. Darcey, James Ahern and T. L. Dowling, representing the Board of Health, the master plumbers and the journeymen of Hartford, Conn., held a session in the Board of Health rooms on Friday evening of last week, for the examination of journeyman plumbers, applicants for licenses as such. Seven men were examined, as follows: T. M. McCarty, M. J. Brazel, E. C. Kelleher, George Owens, John J. Carney, J. C. Keenan and D. O'Connell. The first five passed a successful exami-

nation and will be granted licenses. Keenan and O'Connell have yet to make a practical test to the satisfaction of the board.

PHILO STEWARD, who has officiated for a year or more as bookkeeper in the plumbing firm of N. S. & B. T. Steward, Skowhegan, Me., has purchased the interest of the junior member of the firm. B. T. Steward is soon to establish himself in the same business in Pittsfield, and Geo. Williams, also of Skowhegan, will be associated with him in his new field.

A BUFFALO PLUMBER was up before Mayor Jewett last week for violating the city ordinance in connecting the plumbing in a house without notifying the Water Department. He said one of his assistants neglected to notify the department and that he was out of the city at the time or the thing would not have happened. The Mayor has the power to revoke his license, but it is probable he will let the plumber off with a reprimand.

HENRY A. RATH, Sr., a well-known master plumber, died a few days ago at his residence, in Elizabeth, N. J. Mr. Rath had recently visited Denver and also made trips to the South in the hope of restoring his health, but without success. He was born in New York 48 years ago, and when a boy enlisted as a drummer in the Eighty-eighth New York Volunteers and was severely wounded at the battle of Manassas. On coming to Elizabeth, Mr. Rath learned his trade as a plumber with John Hilton, before which time he had worked for the Richardson & Boynton Company. Later he entered in partnership with Charles Spittlehouse, with which connection he continued in business for seven years and afterward alone for 14 years. For the last two years the firm have been H. A. Rath & Co., his partner being Henry Kleinhans. Mr. Rath was well known in Elizabeth and his death will be severely felt by many friends. Mr. Rath died on the twenty-fifth anniversary of his wedding and besides his widow leaves three sons and one daughter.

Chicago Master Plumbers.

The Master Plumbers' Association of Chicago gave its second annual banquet and ball last week at the Auditorium. About 600 persons were present.

Dr. A. R. Reynolds of the Health Department was on the programme for a toast, but was unable to be present. A pleasant feature of the evening was the presentation of a gold badge to the outgoing president, Paul Redieske, by Secretary Breen on behalf of the association.

Among those present were the following and their wives:

C. H. Herbert, D. Rock, J. J. Wade, J. Sanders, W. J. Corboy, Thomas Conway, Robert Griffith, M. L. Mandable, C. C. Breyer, J. B. Breen, T. M. Murphy, A. Murray, W. H. Cummings, A. G. Weber, G. A. Larson, P. M. Murphy, D. Whiteford, T. C. Boyd, J. J. Doyle, James Barret, Robert Lowden, James Meath, T. P. Cullerton, Hugh Watt, John Roland, D. M. Quay, J. M. Simpson, W. Dunham, E. Baggot, A. Young, J. H. DeViney, A. H. Watson, J. O'Neil, James Scanlan.

THE NORTHWESTERN MASTER PLUMBERS' Association was disbanded at Oshkosh, Wis., last week, and the State Master Plumbers' Association was or-

ganized. No other business was transacted than to wind up the affairs of the old association and to merge it into the new. The officers elected by the association for the year are: President, Patrick Ryan, Appleton; vice-president, George McCall, Chippewa Falls; secretary, W. S. Patterson, Appleton; treasurer, Charles Hulett, Racine. The plumbers from outside the city who attended the meeting were W. S. Patterson, Appleton; Patrick Ryan, Appleton; Ed. Thomas, Green Bay; Anton Brehme, Fort Howard; John Ahearn, Fond du Lac; Michael Murphy, Fond du Lac; Thomas Hamilton, Marinette.

The Hale Basin Waste and Plug.

The accompanying illustration is a sectional view through a basin showing the Hale basin waste and plug offered to the trade by the Dececo Company, 146 High street, Boston, Mass. The particular purpose of this arrangement

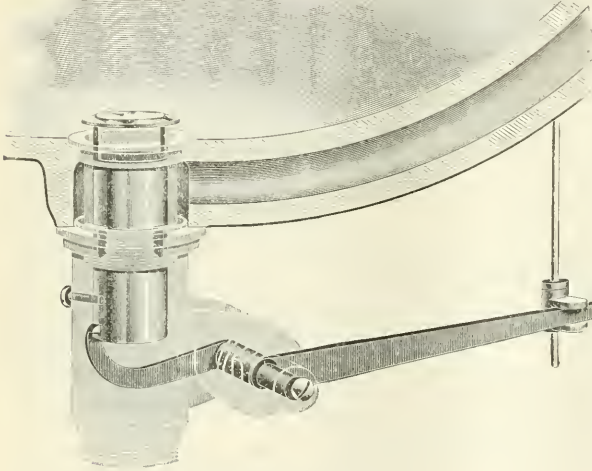
this larger cylinder through slots in the lock nut. It will be seen that it is quite impossible by this arrangement for the water discharging from the bowl to reach the overflow. The Hale waste is also made for use with a plug and chain, doing away with the plug lifting device illustrated. Either form, however, we understand, can be applied to any of the patent overflow bowls.

Dimensions of a Small Treadle Lathe.

A writer in *Engineering* states that, having had occasion to carry out some experiments of a mechanical nature, somewhat accurate and complex, he needed a treadle lathe to do a fair share of work in iron, brass and wood. It must cut screws in steel up to 40 threads per inch with accuracy, and be back geared for heavy work. The slide rest must be of the compound type, the mandrel hollow, and an index plate must be attached to it. The accessories

be fitted with a sliding stay. The width of saddle would not be less than 6 inches. Stop screws would be fitted to each slide. The leading screw, 1 inch in diameter, with V-thread, ten threads per inch, to be attached to slide rest by divided nut 8 inches long. The rod feed would be placed below the leading screw; this would also work the cross feed. The apron would be of the skeleton form in order to observe what is taking place behind it. A machine vise would be fitted to the slide rest, also an angle bracket for placing the compound rest and the vise vertical if desired. A steady rest and T-rests for wood turning would be provided. The tailstock spindle would have a bore of $\frac{1}{2}$ inch clear through, and its nose screwed similar to the mandrel. The spindle would be arranged for both lever and screw feed, and a small four-hole turret would be made for the same, a similar draw bar to be provided for spindle as in the headstock. There would be a light countershaft provided to drive drilling and grinding attachments to slide rest.

The writer believes that such a lathe could be made to sell for between \$150 and \$200.



Hale Basin Waste and Plug.

is to prevent the spattering of waste water up the overflow and thus fouling its walls and permitting the accumulation of filth, which decomposes and gives off offensive odors in the room. Besides the spattering during the outflow of water the contents of the basin backs up the overflow, thus allowing dirt to accumulate within. This possibility is overcome by the waste and plug shown in the illustration. Referring to the cut it will be seen that the plug part of the device is simply a method of opening and closing the outlet of the basin from the outside. The upright spindle shown at the right of the engraving extends through the marble and terminates in a knob for the hand to raise and lower, the former motion closing the basin plug and the latter motion opening it. Both of the motions are positive, as shown by the illustration. It will be seen that the plug has a cylinder which extends down about 2 inches below the overflow, and is inclosed in a larger cylinder which serves as the waste of the basin. When water passes through the overflow it descends into

to be obtained, if possible, from the makers, as time was limited; the tool must be reasonable in price.

The correspondent failed to find a tool meeting all the requirements and of the proper dimensions in stock in either England, Germany or the United States. He therefore advances the following specifications as embracing the main characteristics of a lathe which he thinks would meet a demand already established: Length of bed, 4 feet 6 inches; swing, 9 inches; three-speed cone for $1\frac{1}{2}$ inch belt; mandrel, $1\frac{1}{2}$ inches diameter, $\frac{1}{2}$ -inch bore clear through and fitted with spring chucks with draw bar. The back gear would be 6 to 1, and would be placed under the head stock. The tail of the mandrel would extend beyond the back bearing, and have cone and nut for mounting index plates; the mandrel and boxes would be of steel, hardened, ground and lapped. Machine cut gear wheels to cut from 3 to 64 threads per inch, and right and left hand gear in head stock. The compound slide rest would bear for a length of 14 inches on each side of the bed. It would be slotted for T-bolts, and would

T. Jefferson Coolidge, treasurer of the Amoskeag Mfg. Company, and a leading authority on the New England cotton manufacturing industry, recently gave to a Boston paper his views as to the removal of cotton mills to the South. Labor at the South, he declares, is lower than in the North, the mills are nearer the cotton fields, and there is a large saving in freight charges. Again, Southern railroads take cotton as fifth class freight, while Northern ones take it as second and third class. Then, coal in New England costs \$4.50 a ton, while in the South it does not cost more than \$1.50. Mr. Coolidge, moreover, was of the opinion that these reasons for the mills moving South were likely to increase rather than otherwise, and he thought, therefore, that the movement Southward, instead of falling off, would grow steadily larger.

A writer in the February *Forum* endeavors to explain the large gold shipments to Europe in addition to the ordinary merchandise balances by showing that the United States owes Europe a large debt which costs us some \$350,000,000 a year to liquidate, as follows:

1. For money spent by American travelers abroad, about.....	\$100,000,000
2. For freights carried in foreign ships, about.....	100,000,000
3. For dividends and interest upon American securities still held abroad, minimum.....	75,000,000
4. For profits of foreign corporations doing business here, and of non-residents, derived from real estate investments, partnership profits, &c., about.....	75,000,000
Total.....	\$350,000,000

Last month the H. M. Myers Company, Beaver Falls, Pa., manufacturers of shovels, spades and scoops, turned out the largest product in any one month in the history of the firm, they having made, finished and shipped over 6000 dozen shovels. The firm have all the orders and specifications on hand that they can take care of until May 1, having recently booked a number of large orders for home and export trade.

STOVE TRADE NOTES.

Ohio Stove Trade.

Reports respecting the stove and range industry in this section and adjacent territory are not uniform and may be divided into three classes: those which are unqualifiedly good and encouraging, those which are decidedly dubious, and those which are moderate and temperate in tone, breathing a conservative spirit, reflecting a moderate trade and hope for the future. Of course the experience of one is not the experience of all during a transition period like the present, and the diversity of views is in some respects desirous, exhibiting an individuality which is the life of business success.

Several foundries write that they did not succeed in starting up until near the middle of January after the blowing out due to stock taking and balancing, but that since that time they have been running full. One foundry couples this statement with a comprehensive review of the past month, saying: "Our output for January was 55 per cent. greater than the same month of 1892, and 70 per cent. greater than the same month in 1893 and 1894, between which two years there was a difference in sales of only a few dollars. Our sales of 1894 averaged \$100 a month more than they did for 1893." Adding further: "We have more orders on our books now than we ever had at this season. During the last two or three years the trade has opened up a little earlier each year, and the increase in January sales this year may be accounted for, to some extent at least, by this fact, which would naturally make the other spring months drop off a little; so, on the whole, the spring business may average up about as usual."

This view is substantiated by others, even in other States, and while no "boom" is anticipated a steady improvement, based upon fuller employment of the people, results in increased purchasing power and therefore of consumption. Other manufacturers, while noting an evident lack of confidence, are still able to see an improvement and are disposed to gauge business matters by current events at Washington, and the political death of the present Congress on March 4 is awaited with some impatience. Other sections, however, evidently have met with nothing encouraging and can see no improvement in the immediate future. While foundries have been running full time, sales have been 25 per cent. less than in January, 1894, while the number of customers asking

for indulgences is increasing and customers are disposed to contract rather than extend purchases. No decided improvement is looked for until fall.

After all is said and done, however, it is evident that there is a general sentiment that there is a gradual return of confidence, and while business may fluctuate the tendency is toward recuperation, and this view is sustained by the larger purchases of pig iron by many foundries and mills.

ODD PLATES.

A MEETING of the creditors of the National Vapor Stove & Mfg. Company of Lorain, Ohio, was recently held in Cleveland for the purpose of reorganizing in the interest of those who purchased the plant at a receiver's sale. A new company was organized with a capital stock of \$125,000, the directors being Joseph Collwell, H. B. Hunt, Charles E. Adama, J. B. Sage, Ira B. Bassett, T. A. Reilly and J. A. Reaugh. The Board of Directors elected J. E. Adama president and general manager, H. B. Hunt, vice-president and Joseph Collwell, secretary and treasurer. We understand it is the intention of the company to put the factory at Lorain, Ohio, in operation at once with a full force of men.

In *The Metal Worker* of January 26 an error was made in stating that Geo. W. Graves was one of the corps of representatives of Eugene Munsell & Co., 123 Water street, New York, their relations having been severed during the latter part of 1894. The house are now preparing to push their line of gas and gasoline stoves. The gas cooking attachment for coal ranges has proven quite popular with the trade. They also have some attractions in mica for stove manufacturers.

ON TUESDAY of this week the plant of the Perry Stove Company, Albany, N. Y., resumed operations with a force of about 75 men.

ONE OF THE HANDSOMEST CALENDARS for the new year that has reached us is that just sent out with the compliments of the Weir Stove Company of Taunton, Mass. Mounted upon very heavy cardboard are two rollers working in metallic journals, one roller being placed near the top of the card and the other an equal distance from the bottom. Upon the rollers is wound a long sheet printed with the different months of the year. Each month is a design in itself, and being printed in colors presents an attractive appearance. The borders of the card upon which the calendar is mounted are embellished with designs of a floral and pictorial character, while across the top is the word "Glenwood," and across the bottom the name and address of the company, with an indication of the line of goods manufactured. Accompanying the calendar is an announcement in the shape of a four-page folder illustrating the Glenwood hot air heater and the Glenwood combination hot air and hot

water heater, the latter being made in four sizes and can be furnished with either cast or steel radiator. The company state that they expect to give the trade during the year a number of new and original additions to their already extensive lines.

THE CHICAGO & ERIE STOVE COMPANY of Erie, Pa., are offering the trade the Rapid Helper six hole range, fitted with their patent oven. The latter is constructed with steel bottom so made as to prevent its buckling. This is accomplished by means of cast iron adjustable braces, so arranged under the bottom oven plate as to prevent it from springing out of shape. By opening the flue door this improvement can be partially examined. The manufacturers state that these patent ovens heat very rapidly and are therefore economical in the use of fuel. Three sizes and many styles of the Rapid Helper are offered, all of which have a special flue strip for soft coal.

AT THE ANNUAL MEETING of the Syracuse Stove Works, Syracuse, N. Y., Francis Kernan was elected president and treasurer; Fred J. Finck, vice-president; N. E. Devereux, secretary and William H. Landers, superintendent.

AT THE ANNUAL MEETING of the stockholders of the Foster Stove Works, Ironton, Ohio, J. D. Foster, C. A. Hutinspillar, L. E. Marting, Charles Alexander, E. Horschel, O. P. Doty and H. A. Marting were elected directors. At a meeting of the board a 5 per cent. dividend was declared and officers for the ensuing year chosen. J. D. Foster was elected president; C. A. Hutinspillar, vice-president; L. E. Marting, secretary and treasurer, and Charles Alexander, superintendent.

THE 1895 STAFF of traveling salesmen representing the Syracuse Stove Works of Syracuse, N. Y., include the following, who will visit dealers in the territory named: George N. Pickett in Western New York, C. L. R. Daggett in Central New York, C. H. Ingham in Eastern New York, Ed. A. Wilbur in Michigan and Wisconsin, and George M. Eggleston in New York City and the State of New Jersey. The company resumed operations at their works on Wednesday, January 30.

A RECENT VISITOR at the Cincinnati office of *The Metal Worker* was W. E. Anthony of W. E. Anthony & Co., Detroit, Mich., the Michigan and Minnesota representatives of the Portsmouth Stove & Range Company, Portsmouth, Ohio. Mr. Anthony expresses himself as highly gratified with the brilliant reception the Model wrought steel ranges have met with in the territory named.

GEO. W. GRAVES is about to locate at Rochester, N. Y., where he will handle several lines of heating and cooking goods as manufacturer's agent.

THE DIFFERENCES between the Albany, N. Y., molders and the stove manufacturers, which were of a mild character, are reported to have been amicably adjusted. It is probable that all the foundries in the city, which are

busy with annual inventory, will soon be in operation.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, are sending out a blotter calendar for February, so that a reminder of the Thatcher furnaces and ranges and the Champion steam and hot water heaters will be constantly before the trade.

N. H. SQUIRES, Secretary of the Torrance Iron Company, Troy, N. Y., was a recent visitor among the stove trade in New York. The company make a large line of malleable stove trimming and appliances, lifters, shakers, turn-buckles, draft knobs, &c.

FOUNDRIES Nos 1 and 2 of the Reading Stove Works, Reading, Pa., made their first heats since Christmas on January 31. Foundry No. 3, at Orton, across the river, operated by the same corporation, will also be in operation at an early day. The combined plants of these works give employment to upward of 890 hands.

THE BELLAIRE STOVE WORKS of Bellaire, Ohio are now running half time with a full force, but Manager Johnston states that the works will be operated on full time about the middle of the month. The outlook is said to be encouraging.

THE WOMEN'S EDITION of the Syracuse Post bearing date of February 2, contains various departments covering Finance and Trade, Music, Education, Medicine and Surgery, Religion, Child Life, Physiology, Clubs and Societies, Political Equality, Household Economics and Philanthropy, are all edited by women. The advertisements are of an equally varied character, among the number being that of the J. F. Pease Furnace Company of Syracuse, N. Y. In the space occupied are the opinions from the women of Syracuse concerning the Pease Economy heaters, being, we understand, representative expressions of over 2000 Syracuse women who are using company's heaters and furnaces.

THE MONARCH STOVE COMPANY of Mansfield, Ohio, have issued an exceedingly attractive catalogue of the Monarch stoves and ranges designed for using gas and gasoline as fuels. The publication is known as Catalogue E and consists of 72 pages, profusely illustrated and bound in attractive paper covers with embossed side title, a portion of which is executed in old gold. A feature which tends to give a rich effect to the catalogue is the printing of the pages, the body of each being a delicate brown with white border, while the text appears in black with headlines in blue. The goods shown cover a wide range of gas and gasoline constructions. The opening pages are given up to the Monarch New Method, an artistic creation, fitted with patent vaporizing chambers, Monarch patent sight feed, direct action needle valves made of Tobin bronze, burnished brass burner cylinders with double seamed bottoms and cast heat collars supported by bolting to the top. Following this is the Regal Monarch, a richly treated cabinet range furnished with new high shelf and sub-heating flame; the Monarch range with Russia iron oven and elevated tank; several varieties of the Monarch with burners operated from a single generator; Monarch juniors with single generators and also with individual burners and a varied line of ovens, broilers, burners, &c. Several pages are devoted to repairs and to cuts of the Monarch trade-mark for

newspaper and other advertising. The latter portion of the catalogue is given up to Monarch stoves and ranges for gas, these including cabinet and table stoves, hot plates and heaters. Attention is also given to independent connections, burners, rubber tubing, &c.

A NOTABLY HANDSOME PUBLICATION is issued by White, Warner & Co., Taunton, Mass., in the interests of their household ranges. It is a card shaped like a harp, the frame of which carries some dozen gorgeous roses of many varieties. Each blossom has on it the name of the month, and the days of the month are recorded literally *sub rosa*. It is a beautiful piece of coloring and the shading of the different varieties includes all colors between the light tea and the deep red. Those who have been fortunate enough to receive these calendars will see the whole year in rose color, and will begin each month by turning back a lovely blossom.

THE MANY FRIENDS of Secretary Thomas of the National Association of Stove Manufacturers will be glad to learn of a slight improvement in his condition since our last issue went to press. While the change for the better is thus far but slight, there are strong hopes on the part of his physician and family that if the improvement continues through the next few days Mr. Thomas will before long be able to get out.

COL. WILLIAM LOGAN CLARKE, secretary of the Phillips & Buttorff Mfg. Company, Nashville, Tenn., died in that city of typhoid pneumonia on January 19, after a brief illness, at the age of 56 years. He was a business man of exceptional ability and was much respected by his friends and associates. A widow and six children survive him.

H. GILBERT HART of Hart & Crouse, Utica, N. Y., has been spending a few days in Chicago.

THE FOX FURNACE COMPANY of 28 Vincent street, Cleveland, Ohio, state that their business is showing a remarkable increase, giving evidence of the wide popularity of the Fox furnace. The statement is made that the company's business for January, 1895, was three and a half times as great as during the same month in 1894. The company are kept busy, even in February, which is ordinarily a dull month in the furnace business.

RECENT ADVICES from Evansville, Ind., are to the effect that the strike at the works of Kiechle, Brentano & Oberdorfer, has resulted in more or less disturbance. The report states that some non-union molders from Louisville, who were being taken to the foundry, were attacked by the strikers and some of the men badly injured.

THE CARTON FURNACE COMPANY of Utica, N. Y., state that the fire which visited their works on Sunday, February 3, will not in any way interfere with the conduct of their business, as the damage was confined almost altogether to their small foundry. Their duplicate patterns are intact, and with the stock in their storage building the company are in a position to promptly fill orders for all and sizes and styles of the Carton heaters. Their large foundry, with slight repairs, will be in full operation on Monday, the 11th inst., and the company's new foundry, now under construction, is expected to be ready by March 1. It is interesting to note in this connection that while the fire was in progress on the 3d inst. the

company had plans and details for the erection of a new structure, and before the fire was fairly extinguished gangs of men were at work clearing away the debris.

The Chicago Drainage Canal.

At a recent meeting of the Board of Trustees the annual reports of the chief clerk and the chief engineer were presented. The financial statement was as follows:

Receipts of the District from organization to December 31, 1893.....	\$5,381,737.78
Receipts for the past year.....	7,399,367.93
Total Receipts.....	\$12,781,225.71
Expenditures of District from organization to December 31, 1893.....	5,186,504.83
Expenditures for the past year.....	6,292,134.85
Total expenditures.....	\$11,478,639.68
Balance on hand December 31, 1894.....	\$1,302,586.03

The report of the chief engineer reviewed the work from the beginning, and showed the condition of the undertaking at the present time. Since January 1, 1894, nine sections have been equipped and the plant for working them perfected; eight sections have changed hands, and one has been abandoned by the contractors.

On 11 sections only has the work been vigorously prosecuted. In 1895 the work will begin with 28 sections equipped, and much greater progress is predicted, the completing of the work being expected in the fall of 1896. A safe estimate of the value of the machinery used by the contractors is placed at \$3,000,000.

The rate of progress of the work reached a maximum in August, when the amount earned by the contractors was \$666,481.81, and since then the average has been \$568,031.32 per month.

Several plans have been proposed and considered for the controlling works at Lockport, the one combining the greatest advantages and least cost being a combination of lifting gates and a section of bear trap dam. There will be eight of these gates, working between solid masonry piers, the gates being raised vertically by mechanism operated from bridges spanning the space between the piers. Each space will be 30 feet wide and dam 160 feet between bulkheads. The estimated cost is \$160,000.

One of the special features noted in the detailed report of sections is the performance of two hydraulic dredges on section B. The two dredges excavated 1,588,387 cubic yards in 892½ working days, or an average of 1731.9 cubic yards per day each. The total removed to January 1, 1895, is 12,608,806 yards of glacial drift and 5,358,968 yards of solid rock, or 48-²/₅ per cent. of the glacial drift, 48-²/₅ per cent. of the rock and 48-²/₅ per cent. of the entire work.

One of the most flourishing cities in the Indiana gas belt is Elwood, which, according to a recent statement, has some 30 large industries, capitalized at \$4,350,000 and employing 3270 workers.

The Ohio Falls Car Works have contracted to build 1000 box cars for the Pennsylvania Railroad.

The Manufacture of Tubular Articles.

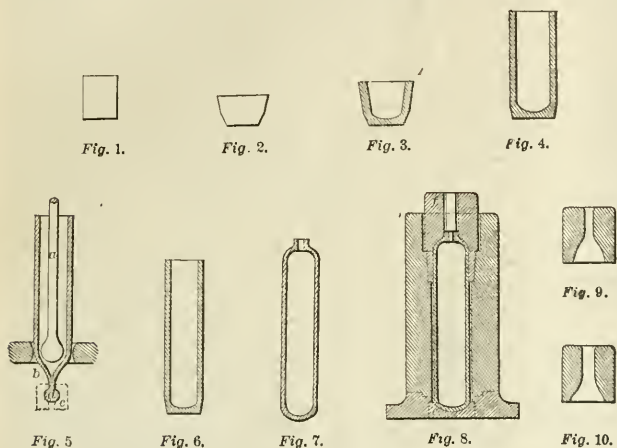
From United States letters patent issued to C. T. Cayley and R. S. Courtman of London, England, and assigned to the United States Projectile Company of Brooklyn, N. Y., we take the accompanying engravings and present the following description of a method of making tubular vessels or bottles for containing gases under pressure. The vessel is made from a solid block of metal, the various steps in the process of manufacture being illustrated in the drawings, Figs. 1 to 10. Fig. 1 is a view of the solid block, Fig. 2 shows the block after it has been pressed to the shape of the bottom of the mold. Fig. 3 is a sectional view of the block after it has been cupped by the action of a punch. In Fig. 4 the cup has been drawn by one or more operations, while heated, nearly to the length, diameter and thickness of the finished article. In Fig. 5 the cup has

brought to the exact diameter required, thereby constituting a complete, finished metallic blank, ready for use in the process of manufacture of the complete, finished tubes, bottles, or tubular vessels about to be described.

We take the following description of the process for lengths greater than 4 feet: "If, however, the tube, bottle or tubular vessel is to be of greater length than 4 feet, or thereabout, we can, by known methods, subject the blank described above to the action of rolls, after having punched, cut or otherwise removed its closed end and inserted a mandrel, said rolls having a series of grooves of diminishing size. After reducing it very nearly to the length, diameter and thickness it will have when finished, it is preferably pickled, to remove the oxide, or scale, from its surface, is then subjected to an annealing process and finally finished by cold drawing. By the latter process we are enabled to reduce the metal to any required thickness, however slight, and

"In the manufacture of blanks for the production of bottles we operate upon a solid block of steel or iron by substantially the same method as that described until it is reduced to the form shown in Fig. 6, the blank being of a length somewhat in excess of that of the bottle when the latter is finished. We then cut off the surplus length from the upper or open end of the tube, and turn or otherwise shape the bottom or closed end, to bring it to the required shape and thickness. The open end of the blank is then heated and placed in a mold, Fig. 8, in which the open end of the blank is to be closed and its neck formed. At the lower end of the mold is a block, *e*, to support the blank against the action of the die *f*, or dies, Figs. 9 and 10. These dies, when more than one are used, operate successively, preferably by hydraulic pressure. The matrix recess in each die is successively approximated to the complete or finished shape, until the last is reached, which imparts the necessary form. The matrix recess in each die opens into a concentric bore having a form adapted to receive and aid in forming the neck of the bottle, this operation being completed by the use of a mandrel having a reduced end, which is passed down through the bore 17 in the die to form the opening in the neck which is to receive the valve."

The United States Projectile Company of Brooklyn are using the process in the manufacture of bicycle tubing, using special Swedish steel billets.



METHOD OF MAKING TUBULAR ARTICLES.

been swaged down and closed at one end to enable it to be drawn through a die and over a mandrel as shown. Fig. 6 shows the completed blank, formed from the partly completed blank seen in Fig. 4, by subjecting the latter to a process of cold drawing. Fig. 7 shows a bottle completely formed from the finished blank, Fig. 6. Fig. 8 shows the method of closing the end and Figs. 9 and 10 show the dies used successively in this process.

The block is first placed in a mold and pressed to the shape shown in Fig. 2, after which, and at the same heat, it is placed in a second mold and by means of a punch is worked into the form of a hollow cup, Fig. 3. The initial tubulation of the metal being thus effected, the cup is placed upon a mandrel and submitted to a process of hot drawing through dies of successively diminishing size, to which the blank is subjected in proper order, being reheated as often as may be necessary. The block has now been brought substantially to the shape shown in Fig. 4. If the blank is to be used in manufacturing a tube about 4 feet or less in length, it may be finished by merely subjecting it to a process of cold drawing by which it is reduced to the proper length and thickness and

we impart to it great strength, stiffness and toughness. We may use for this cold drawing process any known method, but we prefer that illustrated in Fig. 5 of the drawings. This method consists, substantially, in closing and swaging or shaping the end *b* of the tube in such manner as to form thereon a strong, prolonged neck, or shank, 4, provided at its extremity with a knob or other suitable holding device, *d*. This device is placed within the grasp of jaws *c*, reciprocated by any suitable means. Within the tube we insert a mandrel, *a*, having upon its end a ball of such size as to impart the proper interior diameter to the tube. The exterior diameter is imparted by means of a circular die, having its edge convex, or rounded, and lying in suitable position with relation to the interior device *a*. The cold drawing may be completed at a single operation, or it may be effected by repeatedly drawing the tube, the diameter of the die and mandrel being slightly diminished at each operation. By this process we produce not only tubular blanks suitable for the manufacture of bottles or tubular vessels capable of holding gases under pressure, but we can also form tubing sections of any suitable or ordinary length, diameter and thickness.

One of the largest pieces of bronze casting ever made in the United States was shown lately in the foundry of A. T. Loomie, in New York City. It is a statue of the late Major-General Devens of Massachusetts, the work of Olin L. Warner. The figure, which is 9 feet 6 inches in height, was cast in one piece, the arms only being separate. It represents the deceased soldier in the uniform of the United States army, and is dignified in treatment, the workmanship of the draperies being particularly excellent. The statue is a commission from the city of Boston, where it is to be erected. The St. Gaudens statue of Peter Cooper, to be placed in front of the Cooper Institute, which was also cast by Mr. Loomie, is now completed and will shortly be placed in position. The figure is represented seated and was cast in two pieces, over 6000 pounds of metal being used in its construction.

The whaleback steamer "Pathfinder" and her consort "Sagamore," have broken all records for the number of round trips made by a steamer and consort during the season. Since leaving Chicago on April 5 last the "Pathfinder" and "Sagamore" have made 24 round trips, 22 of these being from Duluth to Ohio ports with iron ore. In all, the two boats have carried about 120,000 gross tons of iron ore, 9000 tons of coal and 500,000 bushels of grain. These two vessels are part of the Minnesota Iron Company's fleet. At average current rates, their gross receipts for the season must have been about \$95,000 for ore, \$7500 for grain and \$1800 for coal.

The New York State Superintendent of Public Works, in his annual report, says that the time is fast approaching when operation of the canals of the State in a practical manner must cease unless the canals are improved so that the business done thereon can be done at a profit to the boatmen.

TRADE REPORT.

The Iron Market.

Pig Iron.—The New York market is without important change. Consumers purchase indifferently and orders are chiefly for moderate quantities to be delivered within a short time. The offering is much the same as it has been for some time past, with competition keen, particularly on the lower grades of iron. Prices have not varied greatly, but the market is still rather weak. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Taking everything into consideration it may be said, as regards Philadelphia, that the Pig Iron market is better than it was a week ago. There is more business being done, there is more inquiry, and prices, while not notably dearer, are firmer and in some cases fractionally higher. Consumers are not taking large lots, however, although in the aggregate sales during the past week have been quite heavy. The foundry trade seems to have got fairly to work after several weeks shut down, and as they were all bare of stock buying has been a necessity, and will continue to be so in case orders come in as expected. Sales have been at all sorts of prices, varying according to quantity, point of delivery and grade of iron required. The lowest for Philadelphia would be at the following inside figures, and from that upward, with 20¢ @ 30¢ less for all grades delivered at Harrisburg, York, Baltimore, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	\$11.00 to \$11.50
No. 2 Plain.....	\$10.75 to \$11.00
No. 1 Soft.....	\$11.50 to \$11.75
No. 2 Soft.....	\$10.75 to \$11.00

Chicago advices indicate that local iron has been in better demand the past week in that market. One contract of 1000 tons was entered and a good number of small sales were made. Shipments on old orders are increasing, as consumers find that they require much more material than was expected. Foundrymen are carrying no stocks in their yards and are constantly urging more prompt shipment from the furnaces. Sales of about 2000 tons of Southern Iron are reported in various lots, but the only character of Southern iron in demand is soft grades. Prices appear to be firmly maintained. Lake Superior Charcoal is quiet. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	\$10.25 to \$10.50
Local Coke Foundry, No. 2.....	\$9.75 to \$10.00
Local Coke Foundry, No. 3.....	\$9.50 to \$9.75
Local Scotch.....	\$10.50 to \$11.00
Ohio Strong Softeners, No. 1.....	\$12.50 to \$13.00
Southern Silvery, No. 1.....	\$11.50 to \$11.75
Southern Silvery, No. 2.....	\$11.25 to \$11.50
Southern Coke, No. 2.....	\$10.00 to \$10.50
Southern Coke, No. 3.....	\$9.75 to \$10.25
Southern, No. 1, Soft.....	\$10.25 to \$10.50
Southern, No. 2, Soft.....	\$9.75 to \$10.25
Alabama Car Wheel.....	\$17.50 to \$18.00
Jackson County Silvery.....	\$15.50 to \$16.00
Other Ohio Silvery.....	\$14.25 to \$14.50

In the Pittsburgh district the work

has been without special features. There is only a limited demand for Foundry Iron, and prices depend largely upon the size of the order and the conditions surrounding it. We quote as follows, for cash:

No. 1 Foundry.....	\$10.50 to \$10.65
No. 2 Foundry.....	\$9.75 to \$10.00

Several encouraging features have been developed in the Cincinnati Pig Iron situation during the past week and an increased volume of business has been transacted. Between 15,000 and 20,000 tons of iron have been sold by local factors for distribution to diversified interests, extending over one to four months in delivery. Quite a number of mills as well as foundries of various kinds have been in the market and the freer purchases indicate either more confidence in the Metal market or increased orders for finished product making it necessary to cover contracts. Probably both these facts and opinions have influenced purchases. On the other hand, while furnaces are still taking orders at current quotations, it is evident that they have a firmer feeling and are more encouraged respecting the near future. At the close there are a number of buyers in the market and several important transactions are pending. Quotations are without essential change; transactions, as a rule, are based more upon inside than outside quotations, but the tone of the market is a little harder at the close. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	\$9.00 to \$9.25
Southern Coke, No. 3.....	\$8.50 to \$8.75
Ohio Soft Stone Coal, No. 1.....	\$14.50 to \$15.00
Ohio Soft Stone Coal, No. 2.....	\$14.00 to \$14.50
Lake Superior Coke, No. 1.....	\$11.75 to \$12.25
Lake Superior Coke, No. 2.....	\$10.75 to \$11.50
Hanging Rock Charcoal, No. 1.....	\$16.00 to \$16.50
Hanging Rock Charcoal, No. 2.....	\$15.50 to \$16.00
Tennessee Charcoal, No. 1.....	\$13.00 to \$13.50
Tennessee Charcoal, No. 2.....	\$12.00 to \$12.50
Standard Southern Car Wheel.....	\$15.75 to \$16.75
Lake Superior Car Wheel and Malleable.....	\$14.25 to \$14.75

The St. Louis Pig Iron market is if anything less favorable than when last reported. Sales are reported as small, and consumers are all restricting their purchases to limited quantities, with the possible exception of the local Pipe works, who have bought between 5000 and 6000 tons since the first of the year. Prices are weak and appear too heavy. No. 2 Foundry is quoted at \$6.75, f.o.b. cars Birmingham, and this price has been shaded in some cases. The general situation is anything but encouraging. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	\$9.50 to \$9.75
Southern Coke, No. 3 Foundry.....	\$9.00 to \$9.25
Southern Car Wheel.....	\$16.00 to \$16.50

CONTRACTORS in Pipe Fitting will find at the works of the Eastwood Wire Mfg. Company, Belleville, N. J., a full line of Perfection Bronze Fittings such as are used in connection with digesters of paper mills and chemical works. The company are also prepared to furnish Perfection Bronze Castings up to 9000 lb in weight. They are now at work on an order for 5-inch Flange Cocks for use in a chemical plant.

Metal Market.

Pig Tin.—Spot stock has been under close control throughout the week, and prices have been held at a sharp premium over those at which contracts for the current month were sold and more or less freely offered. The premium was due to the fact that the concentration of spot supply in the hands of a few dealers left little available tin elsewhere for speculative purposes. The market closed quiet but firm. Retail business has been moderate, with prices for small lots of Straits from store unchanged at about 15¢ @ 16¢ lb. for Pig and 16¢ for Bar. The visible supply on the 1st inst. is computed at 24,546 tons, against 24,614 tons on January 1. Of this amount 1594 tons was on the spot here and 3200 tons afloat for this country. London had 10,157 tons spot and 4420 tons afloat. The balance consisted of Continental holdings and stock afloat for that quarter. Compared with a year ago, the visible supply shows an increase of about 7000 tons.

Copper.—Business has been rather slow and prices have weakened slightly under the influence of freer offerings of some brands for both prompt and near future delivery. The severe weather has interfered somewhat with the demand for both Ingot and Manufactured Copper. Small lots of Lake Ingot from store are quoted at 10½¢ @ 11¢ lb.

Pig Lead.—The market has been remarkably steady. No fluctuation to speak of in prices has taken place. Buying interest has not been at all brisk, but the demand increased somewhat the past few days and about 400 tons were sold, chiefly for early delivery. The situation at the primary sources of supply is regarded as strong statistically. No noteworthy improvement has developed in the demand from small consumers, who are buying very indifferently. Retail prices for small parcels of American Pig rule at 3¼¢ @ 3½¢ @ 11¢ lb.

Spelter.—In sympathy with reduced cost at the West the market here has weakened further, and is at present in poor shape. The lower prices have stimulated buying to a very moderate extent only. Prime Western brands in small parcels are quoted at 4¢ @ 4½¢, with inferior brands at slightly lower prices.

Antimony.—About the usual jobbing business is passing. Prices on 94½¢ @ 100¢ lb remain steady at 9½¢ @ 9¾¢ @ 11¢ lb for Cookson's and 8¢ for Hallett's.

Tin Plate.—Very low prices have served to keep up a fairly live interest in Cokes for future delivery. Otherwise the market has been "flat, stale and unprofitable." Spot business, which is still moderate and of a hard to mouth character, has been seriously contracted by the severe weather prevailing in this section, which has effectually stopped all out of door work. Prices are still more or less weak, with a slight decline quoted in some lines.

February 9, 1895

Stocks in jobbers' and importers' hands are good and the assortment fair. Production on the other side has been materially reduced through the closing down of about 50% of the Welsh works. On the other hand the domestic producing capacity is increasing rapidly by the starting up of American plants under the new wage agreement.

A special London cable dispatch of February 6, to *The Iron Age*, reports on the British Tin Plate market as follows: In Tin Plate there has been scarcely anything doing. Buyers decline to operate beyond small orders in hand. There is less American inquiry. Bessemer Cokes have been pressed for sale at as low as 9/ without finding buyers and Siemens are offered at 9/4½. Quotations f.o.b. Wales are given as follows:

Bessemer Cokes, 1C 14 x 20.....	9/	@	9/1 $\frac{1}{2}$
Siemens Cokes, 1C 14 x 20.....	....	@	9/4 $\frac{1}{2}$
Ternes, 20 x 28.....	18/	@	23/
Charcoals, 1C 14 x 20.....	10/6	@	13/

Sheet Iron.—The movement in both Black and Galvanized Sheets has been moderate during the week under review. The jobbing demand has been restricted by the severity of the weather. Manufacturers' agents say, however, that a good deal of inquiry is coming in from the larger consumers, who are anxious to close for their spring and early summer requirements, being evidently satisfied that it is a good thing to buy at present prices. Jobbers' quotations for small lots of No. 27 Common Iron from store are about 2.65¢. Galvanized Sheets in small lots rule at 75 and 5¢ @ 75 and 10¢ off.

Trade Notes.

THE SWARTS METAL COMPANY, of which S. Swarts is president, have opened an office and salesrooms at 120 West Lake street, Chicago. They are manufacturers, jobbers and exporters of Metals, handling high grade Babbitt, Solder, Stereotype and Electrotpe Metal, Pig Lead, Pig Tin, Copper, &c. They will shortly issue an illustrated catalogue describing different grades of Metals and Alloys.

THE CONNECTICUT PLATING COMPANY, 217 North Tenth street, Philadelphia, are calling the attention of the trade to their facilities for Electro Plating in gold, silver, nickel and other metals, and state that they are especially equipped for Electro Bronzing heavy castings for architectural and other works.

THE HUGHES-TAYLOR CAN COMPANY, Baltimore, Md., have been incorporated by Charles J. Hughes and Henry C. Winebrenner with \$30,000 capital.

THE OLIVER SHEET IRON MILLS, Easton, Pa., which have been idle for several years and which have been recently put in repair, will, it is announced, be put in operation with a large number of hands in a few days.

Gustaf von Leibhaus, a German official, is now in the United States inspecting the sewerage systems of American cities for the purpose of reporting thereon to the Berlin authorities. He regards the Washington system as superior to that of New York, Philadelphia or Baltimore. The sewerage system of Paris, he believes, leads the world.

CONDITION OF THE

Hardware Trade.

IT IS GRATIFYING to hear from many who have made a careful comparison of January, 1895, with that of 1894 that the present year begins with greater promise than did the last. A number of merchants and manufacturers advise us that not only have they sold a greater quantity of goods during the past month than a year ago, but that the value of goods is greater. This is certainly an encouraging feature considering the fact that goods are probably from 20 to 25 per cent. cheaper. Orders are reported to be

coming in more freely, and it is evident that trade is gradually improving. The severe weather which has prevailed in many parts of the country has, however, had, and still has, the effect of retarding the demand. Careful buyers are watching the market closely and note with interest the improved tone in Wire Nails, Barb Wire and some other goods that lie near the raw material and on which prices have been exceptionally low. The advances which have taken place have a good effect on the tone of the market, though as yet there has been no general strengthening of prices, which continue on many lines weak and irregular, lower quotations being made than ever before. In this condition of things the trade are naturally reluctant to place orders beyond their requirements, unless it be in a few cases where the buyer is confident the lowest prices have been reached and that it is a safe policy to order. There is, however, comparatively little of this, as prices have for so long a time been tending downward that it is a question with many as to whether or not a turn may be expected in the near future.

Advice from Chicago.—The volume of business in Shelf Hardware is not so large as it was. The extremely cold weather, the worst known in this section for years, has been of such prolonged duration that it interferes seriously with outdoor work and has cut off the demand for important classes of material. Seasonable goods for spring delivery are in fair request, and staple goods are doing well when they can be had at the low prices recently made by the large jobbing houses. A remarkably strong demand is noted for Stamped, Pieced and Japanned Tinware. Jobbers are having much difficulty in keeping up their stock and are buying from each other in order to meet the requirements of their customers. Aluminum Goods are also going remarkably well considering the comparative dullness of this ware. Numerous inquiries for Tinners' Tools and Machines are now coming forward, more than for three years past, showing that people are again starting into business. This is taken as a strong indication that confidence is being restored among the people at large. Heavy Hardware is in fair condition with a healthy movement, although the volume is not as large as jobbers would like to see. Everything taken is going at once into the hands of consumers and any increase in consumption is therefore perceived immediately.

Notes on Prices.

Wire Nails.—The improvement referred to in our last issue still holds, the market being firm with an active demand and the order books of the manufacturers well filled. The tone of the market is decidedly firmer and prices are well maintained. There is an active demand coming in from the larger and the smaller trade, and all indications point to the fact that stocks in the hands of the trade generally are exceptionally light. At the same time it is pointed out by the manufacturers that the production of Nails is considerably less than it was a year ago and in their opinion the demand will easily take care of all the goods which can be manufactured during the current half year.

Advises from Chicago.—Manufacturers maintain the firm position noted last week. Large inquiries are in hand, some for delivery running up to the opening of navigation. Jobbers have not advanced their prices, some continuing to sell at 95 cents, while others ask \$1 to \$1.05.

Cut Nails.—The Cut Nail market continues without important change. Small lots from store, New York, are quoted at 90 cents. The volume of business is moderate and the tone of the market slightly irregular.

Advices from Chicago.—Manufacturers report only a moderate trade at unchanged prices. Jobbers sell small lots from stock at \$1.

Barb Wire.—In our last report we referred to the slightly better feeling in the Barb Wire market, without, however, a quotable advance. During the past week there has been a still further improvement and prices are a little higher. Small lots from store in New York are held at \$2.15 to \$2.20. There is an increasing demand, and the outlook for the season's business is promising.

Advice from Chicago.—A large trade is in progress, which is particularly heavy to the Southwest. Texas and the Indian Territory appear to be the points now developing the strongest demand. Prices are fairly firm, but it is stated that some concessions are being made to secure as large a share of the Southwestern business as possible. The demand in this immediate vicinity is about as it has been, some jobbers reporting a good run of orders for spring delivery. The general demand for Wire products is steadily increasing and the leading establishments expect to be crowded to their utmost capacity to meet the requirements of their customers in March. Jobbers' quotations range from \$1.55 to \$1.65 for carloads of Painted and \$1.90 to \$2 for Galvanized.

Shot.—An advance of 5 cents in the price of Shot is announced under date January 30. The following are the revised prices, terms net 30 days, or 2 per cent. discount for cash in 10 days, a discount of 5 cents per bag (25 pounds), and a special discount of $2\frac{1}{2}$ per cent. being allowed on lots of one ton and upward, bought, invoiced and paid for at one time :

Drop Shot up to B, 25-pound bag.....	\$1.15
" 5 " 	.30
Buck Shot, 25-pound " bag.....	1.40
" 5 " 	.35
Chilled Shot, 25-pound bag.....	1.40
" 5 " 	.35
Dust Shot, 25-pound " bag.....	1.75
" 5 " 	.40

Bright Wire Goods.—The market for Bright Wire Goods has recently been showing evident marks of weakness, and prices are lower. There is, however, a good deal of irregularity in the quotations named by the different manufacturers, some of whom refrain from pressing their goods in view of the still lower prices of their competitors.

Wrought Goods.—The market for Wrought Goods is in an unsatisfactory, unsettled and somewhat demoralized condition, prices generally being low and very low quotations being made by some manufacturers. The lowest prices current are, it is understood, on goods of inferior quality and light weight. It will be worth while for the trade to look carefully into the quality of goods in this line, as well as prices at which their orders are accepted.

Wrought Iron Pipe.—The Wrought Iron Pipe and Tube Manufacturers' Association met at the Monongahela House, Pittsburgh, on Tuesday and Wednesday of last week, this being the first meeting of this organization held for some months. Sixteen firms were represented in person, as follows:

AMERICAN TUBE & IRON COMPANY, Middletown, Pa., and Youngstown, Ohio.

A. M. BYERS & CO., Pittsburgh, Pa.

CONSHOCKEN TUBE COMPANY, Conshohocken, Pa.

DUQUESNE TUBE WORKS COMPANY, Pittsburgh, Pa.

SPANG, CHALFANT & CO., Pittsburgh, Pa.

NATIONAL TUBE WORKS COMPANY, McKeesport, Pa.

OIL CITY TUBE COMPANY, Oil City, Pa.

OIL WELL SUPPLY COMPANY, Pittsburgh, Pa.

MORRIS, TASKER & CO., INC., Philadelphia, Pa.

PENNSYLVANIA TUBE WORKS, Pittsburgh, Pa.

THE PITTSBURGH TUBE COMPANY, Pittsburgh, Pa.

RIVERSIDE IRON WORKS, Wheeling, W. Va.

WESTERN TUBE COMPANY, Kewanee, Ill.

COHOES TUBE COMPANY, Cohoes, N. Y.

SYRACUSE TUBE COMPANY, Syracuse, N. Y.

Frank J. Hearne of the Riverside Iron Works, Wheeling, W. Va., was chairman, and Joseph Brown of Pittsburgh secretary. The object of the meeting was to consider the advisability of advancing prices on Pipes and Tubes and to take any other action that would improve the condition of this industry, which has been unsatisfactory for some time. After a thorough discussion it was resolved to rearrange the lists and discounts on Pipes and Tubes and to make slight advances in prices. We give below the new lists and discounts adopted, as follows:

Wrought Iron Pipe, Lap Welded.				
Diam. inches.	Black	Galv'd.	X	XX
			strong.	strong.
1 1/2	\$0.05 1/2	\$0.08	\$0.11	\$0.22
2	05 3/4	07 1/2	.11	.23
3	05 3/4	07 1/2	.11	.23
4	07	09 1/2	.14	.28
5	08 1/2	11 1/2	.17	.34
6	11 1/2	16	.23 1/2	.47
8	15 1/2	22	.31	.62

From the above list the manufacturers announce a discount of 70 per cent. on Butt Welded Pipe, Black, and 64 per cent. discount on Butt Welded Pipe, Galvanized.

Wrought Iron Pipe, Lap Welded.

Diam. inches.	Black	Galv'd.	X	XX
			strong.	strong.
1 1/2	\$0.26	\$0.31	\$0.52	\$1.04
2	35	.42	.70	1.40
3	52	.62	1.04	2.73
4	68	.80	1.36	3.57
5	81	.96	1.62	4.25
6	95	1.16	1.90	5.00
8	1.25	1.50	2.50	6.56
10	1.42	1.75	2.84	7.45
12	1.85	2.20	3.70	9.25
14	2.45	3.00	4.90	12.25
16	2.95	3.70	5.90	14.75
18	3.75	.....	.....	.....
20	4.75	.....	.....	.....

Referring to the above list the association determined on the following discounts: On Black Lap Welded Pipe, 77 per cent.; on Galvanized Lap Welded Pipe, 68 per cent.

Standard Boiler Tubes.

Size O. D.	Price.	Size O. D.	Price.
1	\$0.37	4 1/2	\$0.69
1 1/2	35	5	82
2	32	6	1.08
2 1/2	32	7	1.33
3	30	8	1.70
3 1/2	29	9	2.25
4	26	10	2.76
4 1/2	29	11	3.30
5	29	12	3.77
5 1/2	45	13	4.43
6	48	14	5.04
6 1/2	55	15	5.87
8	63	16	6.50

On sizes of Boiler Tubes from 1-inch to 2 1/2-inch a discount of 75 per cent. is announced, and on larger sizes from 2 1/2 inch to 16 inch a discount of 77 1/2 per cent.

Lap Welded Casing.

Nom. I. D.	Nom. O. D.	B. W. G.	Price.	Weight.	Threads.
2	2 1/2	13	\$0.24	2.22	14
2 1/2	3	12	.26	2.82	14
3	3 1/2	12	.27	3.18	14
3 1/2	4	12	.29	3.45	14
4	4 1/2	11	.32	4.10	14
4 1/2	5	11	.35	4.45	14
5	5 1/2	11	.37	4.78	14
5 1/2	6	10	.43	5.56	14
6	6 1/2	10	.46	6.00	14
6 1/2	7	10	.50	6.38	14
7	7 1/2	9	.67	9.36	14
7 1/2	8	9	.52	6.73	14
8	8 1/2	9	.56	7.39	14
8 1/2	9 1/2	9	.58	7.80	14
9	9 1/2	9	.61	8.20	14
9 1/2	10 1/2	7	.71	9.86	14
10	10 1/2	4	.87	12.80	11 1/2
10 1/2	11 1/2	1	1.06	15.88	11 1/2
11 1/2	12 1/2	9	.63	8.62	14
12 1/2	13 1/2	5	.84	12.49	11 1/2
13 1/2	14 1/2	8	.73	10.46	14
14 1/2	15 1/2	6	.83	12.04	11 1/2
15 1/2	16 1/2	4	.95	14.20	11 1/2
16 1/2	17 1/2	2 1/2	1.13	16.70	11 1/2
17 1/2	18 1/2	8	.85	11.58	14
18 1/2	19 1/2	6 1/2	.97	13.52	11 1/2
19 1/2	20 1/2	6 1/2	1.18	17.02	11 1/2
20 1/2	21 1/2	8	.88	12.34	14
21 1/2	22 1/2	7	1.27	17.51	11 1/2
22 1/2	23 1/2	8	1.06	13.55	14
23 1/2	24 1/2	7	1.23	15.41	11 1/2
24 1/2	25 1/2	4	1.53	20.17	11 1/2
25 1/2	26 1/2	7	1.25	16.07	11 1/2
26 1/2	27 1/2	5	1.56	20.10	11 1/2
27 1/2	28 1/2	6	1.86	24.48	11 1/2
28 1/2	29 1/2	7	1.51	17.60	11 1/2
29 1/2	30 1/2	6	1.80	21.90	11 1/2
30 1/2	31 1/2	5	2.13	26.72	11 1/2
31 1/2	32 1/2	4 1/2	2.42	30.35	11 1/2
32 1/2	33 1/2	3 1/2	2.95	33.78	11 1/2
33 1/2	34 1/2	2 1/2	3.48	43.02	11 1/2
34 1/2	35 1/2	2	4.15	47.66	11 1/2
35 1/2	36 1/2	2	4.57	51.47	11 1/2

The discounts relating to the above list as announced by the association are as follows:

	Per cent.
Screw and socket joint casing.....	65
Inserted joint casing.....	60

In connection with the foregoing it will be understood that additional discounts are allowed by the manufacturers to the large buyers and to the jobbing trade. It is stated by the manufacturers that a determined effort will be made to sustain the advanced prices. Manufacturers present at the meeting reported a considerably larger demand at present

than is usual at this season, and the outlook for the future is regarded as very encouraging.

Lawn Mowers.—There are many indications that a large business will be done during the present season in Lawn Mowers. The market is, however, in a somewhat unsatisfactory condition. On the cheaper machines very low prices are being made, while on the better grades the market has a better tone. In view of the unprofitable prices prevailing on goods which are without recognized position some of the manufacturers have withdrawn from the market for the present, but with increased facilities on the part of their competitors and new concerns in the field the supply of machines is ample and competition active.

Philadelphia Lawn Sprinkler.—This Lawn Sprinkler was described in *The Metal Worker*, January 26, as manufactured by the Philadelphia Lawn Mower Company, Philadelphia. The Sprinkler is sold from the following list, which is subject to a discount of 35 1/2 per cent., f.o.b. Philadelphia:

	Each.
No. 1.....	\$1.00
No. 2.....	1.25
No. 3.....	2.00
No. 4, with turtle back.....	7.00

Columbian Enamelled Steelware.—We are advised by the Bellaire Stamping Company, Harvey, Ill., that they have made a reduction in the price of their Columbian Enamelled Steelware for the season of 1895.

Grip Wire Stretcher.—Grip Wire Stretcher, put on the market by W. C. Heller & Co., Mountclair, N. J., is priced at \$3 per dozen, subject to a discount of 50 per cent.

Glass.—Within the past week or two there has been a decrease in the American Window Glass productive capacity of the country equivalent to about 70 pots. This has been caused by factories going out of blast for repairs, and they are likely to remain idle for two or three weeks. The impression prevails that shut downs, ostensibly for repairs, will become more common, as orders are now pretty well filled and present prices offer little or no inducement for stocking Glass at factories. It is expected that the amount of Glass made will gradually decrease until prices and demand offer additional incentives to production. The New York market is represented by the following quotations: In small lots, 85 and 15 per cent. discount for single and 85 and 20 per cent. discount for double strength Glass. Further reports have come to hand regarding the new arrangement among the American Plate Glass manufacturers, to which reference was made in our issue of January 10, 1895, which indicate that the properties of the several Plate Glass companies will be sold to a corporation upon a basis of \$10,000,000.

Old Metals.—Business is only fair and prices are barely steady. The following quotations represent the current rates paid by dealers in this city:

Heavy Copper.....	¢ 7 1/2
Light and Tinned Copper.....	¢ 6 1/2
Heavy Brass.....	¢ 4 1/2
Light Brass.....	¢ 3 1/2
Lead.....	¢ 2 1/2
Tea Lead.....	¢ 2 1/2
Zinc.....	¢ 2 1/2
No. 1 Pewter.....	¢ 10
No. 2 Pewter.....	¢ 5 1/2
Wrought Scrap Iron, gross.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross 7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

THE METAL WORKER.

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CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....312 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 43 Cannon street, London, England.

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A New Illuminant.

Gas fitters are likely to have their field of operations enlarged by the commercial introduction of an illuminant that hitherto has cost so much to make that, although its qualities have been for a considerable period known to chemists, it has not been considered practicable to use it for the purpose of artificial lighting. This curious substance, known as acetylene, is a gas which, in its pure state, burns freely with a rather smoky flame very much resembling in appearance the flame of a ball of cotton soaked in oil of turpentine; but, when mixed with water gas of low candle power and in the proper proportions it increases the illuminating power of the poorer gas very greatly. It makes a still better and more economical light by mixing it with atmospheric air in a manner which has been somewhat employed for burning vaporized gasoline. But it has the advantage over gasoline vapor of not condensing to a liquid form in cold pipes, which has always been a difficulty in burning gasoline vapor, except in apparatus where this vapor is first converted into a permanent gas by the action of heat.

How Acetylene is Made.

When lime is heated with carbon in a closed vessel to a temperature of from 4500 to 5000° F., a substance called calcium carbide is formed. This substance, when excluded from air, is easily kept and transported; and in these respects it is well adapted to commerce. But the temperature required to form it has only recently been obtained at a cost commercially practicable by the use of the electric furnace, and even this was out of the question until the more recent improvements in dynamos were made. Now calcium carbide can be made much more cheaply than it ever could be produced before,

and in large quantities. Although it can be kept indefinitely when excluded from moisture, when it is brought in contact with water it rapidly decomposes and gives off acetylene. This, without further preparation, mixed with air, makes one of the finest illuminating gases yet produced.

Application of Acetylene.

As yet, acetylene is not produced cheaply enough to be used as an enricher in large gas works and in competition with materials now employed for that purpose; but, as the industry is in its infancy, all precedent points to the belief that it will be still further cheapened. It is stated on good authority that carbide of calcium can now be delivered to consumers at \$30 per ton, including freight; and also that a ton of it will produce enough acetylene to mix with air into an illuminant equal in lighting power to 100,000 cubic feet of illuminating gas of 25 candle-power. Although to this must be added the interest and deterioration on the apparatus needed to effect the decomposition of the calcium carbide and the admixture of the resulting acetylene with the needed quantity of air, and also some cost for attendance, the total cost of the gas so made is now low enough to render the new illuminant highly desirable for country seats, isolated hotels, &c., remote from city gas works; and it also may be used in lighting railway cars.

The Weather and Plumbers.

It is quite notable that no class of workmen have suffered more during the recent cold weather than the plumbers. In many cases it has been simply heroic charity to leave a shop or job where the surroundings were clean and comfortable to make repairs made necessary by the zero weather. The plumber is truly a public benefactor when he comes promptly to restore to perfect order a modern plumbing system, the luxury of which is only appreciated when it must be foregone. It requires a robust moral courage as well as a strong body to make a careful and conscientious search for the leaks and troubles due to freezing, and then under great disadvantages to repair the job. Considerable suffering must be borne in wading through the water found and enduring the soaking that sometimes comes with the thawing process. In summer this would be disagreeable, but when the temperature is unbearably so that it is difficult to work, the plumber runs a risk to health and life for which the few dollars earned by no means compensate. Working

hours have no end during the emergency, and all to benefit customers who are very likely to prove anything but thankful for the service rendered when the bill is presented.

The German Stove Trade.

A German manufacturer of stoves recently visited some of our Northern stove foundries. The comparison drawn by him between conditions prevailing here and those of his locality in Germany are interesting. He stated that for pig iron of the same grade he pays 40 per cent. more than is paid by our foundrymen, and for fuel double the American price, but his labor costs him only one-third of the daily rate paid here. Notwithstanding the higher American wages, he found that in many instances work is done in our foundries at a lower cost per piece than in Germany. This is ascribed to the system of piece work in vogue in American factories and the vim with which our workmen perform their tasks. He stated that it would be impossible to get his workmen to move with such celerity. They go to work at 6 o'clock in the morning, stop at 8 for breakfast, which takes half an hour or more, stop again at 12 for dinner and perhaps consume an hour and a half, take another rest at 4 to check the cravings of hunger, and stop finally at 6, thus nominally putting in 12 hours of work, but actually rendering about 9½ hours. They are contented and easily managed, their contentment being largely ascribed to the pension system now prevailing in Germany. This system provides a workman with an annual pension of \$125 when he reaches the age of 70, provided that he has a good record as an industrious man. Elaborate arrangements are made by which the record of each workman is kept weekly. The pension is paid by the Government from a fund raised partly by small weekly payments by the workmen themselves, partly by corresponding payments made by employers and partly by appropriations from the Government revenue. The reduction of the pension receiving age to 65 years is now being agitated.

One of the attractive features of the Cotton States and International Exposition, to be opened at Atlanta, Ga., next September, will be a reproduction in miniature of the Chicago World's Fair. The exhibit is being prepared by G. W. Ferris, the builder of the Ferris Wheel, on a scale of one-one hundred and fortieth. Every detail of the great Columbian Exposition will be given, the whole space to be occupied being 75 feet in length.

THE LETTER BOX.

Electric Bell Trouble.

From C., Connecticut—We have an electric bell connection between two buildings which are some 200 feet apart. The battery of five cells is located within 10 feet of the push button, and seems to be sufficient for one bell, but not for two as desired. It is an assorted battery, composed of a Diamond, Sampson and one cell not marked. These have each been tested on short circuit; also, the wires are properly insulated. The question is, shall we increase the power by additional cells or lay the battery within 10 feet of the bells? We can't put it midway.

Answer.—As the current generated by the battery must travel around the entire circuit of bells and wire back to its starting point, it will readily be seen that the location of the battery on the line in no way affects its working. Our correspondent has an abundance of battery power now; in fact, more than necessary. Three cells should be sufficient for the purpose. Where more than one cell of battery is used they should be of one make. A mixed battery seldom gives good results. If, as stated, these cells have been separately tested and each found in good condition, three of them, if of the same construction, will suffice, bearing in mind that each of them must be in good condition, as one weak cell in any number of strong ones would bring them all down to its own level. The use of an unnecessarily strong battery is to be avoided, as it is apt to burn out the contact point which touches the armature of the bell. We understand from the query that our correspondent has two bells on one circuit which are to ring simultaneously. If such is the case, one of them should be converted into a single stroke bell, as the vibrations of one bell interfere with those of the other and neither will ring. *The Metal Worker* of December 2, 1893, under the head of "Domestic Electrical Work," Chapter 2, gives detailed information on the subject of operating more than one bell on one circuit. Fig. 5 of this chapter shows the manner of changing an ordinary vibrating bell to single stroke. Our correspondent should be sure that he has but one wire under a staple on the circuit.

Cold Air Duct.

From EDWARD TROBLIGHT, St. Louis—In *The Metal Worker* of February 2 "J. L." of Pittsburgh, Pa., requests from your readers the address of a manufacturer of air filters for furnace cold air ducts. I inclose you a circular

giving description and name of the manufacturer of such an article.

Note.—The circular inclosed in our correspondent's letter is issued by the Ludlow Saylor Wire Company, St. Louis, Mo., and illustrates and describes their patent soot screen, which is a wire screen carrying a filtering fabric to prevent the entrance of dust. The screens are fitted to wooden frames, which can be removed from the cold air duct.

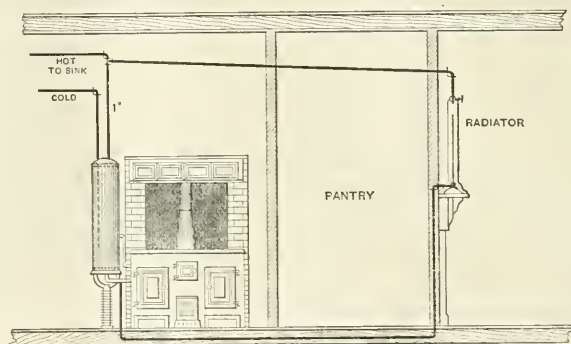
Will It Work?

From F. L. M., Roseville, N. J.—The range in a flat here makes more hot water than is needed and I want to utilize the surplus heat for heating the dining room, which is now heated by a stove. Between the kitchen and dining

the radiator work as well or better if it was placed on the floor instead of on the mantel where it is out of the way. The dining room is 10 feet 6 inches by 18 feet with a 10-foot ceiling and has a large window. The pantry through which the pipes pass has a window. Should the pipes be wrapped?

Method of Heating Water.

From J. P., Massachusetts.—I would like to have the opinion of the readers of *The Metal Worker* on the following arrangement for supplying hot water by means of a boiler to several apartments in a building: I wish to locate a boiler of sufficient size at some convenient point, and then during the winter season heat the water by means of a coil placed at the fire chamber of the steam heater. I wish to know if a small hot water heater can be connected with the pipe from the coil in the



Will It Work?—Section through Rooms.

room there is a pantry 4 feet wide through which the piping would have to run, as shown by the sketch sent herewith. The question is, can the dining room be heated by hot water circulation from the range water back which has ample heating power? The idea is to take the brass connection out of the top of the boiler and pipe with 1-inch iron pipe to the radiator with a fall all the way to it. A $\frac{3}{4}$ -inch branch will be taken from the flow pipe at the top of the boiler to supply the kitchen and bathroom. A stop cock will be placed on the flow at the radiator, and as the supply to the house fixtures will come out of the top of the flow I think that an air valve will not be needed. A 1-inch return will run from the radiator down to the floor and across the pantry and along in front of the range, close up out of the way, and will rise to the water back and connect full size. The cold water pipe from the boiler will connect into the $\frac{3}{4}$ -inch opening in the tee on the return pipe. I would like the readers of *The Metal Worker* who have had experience in hot water heating to give their views on this plan. If the room was over the kitchen I know it would work. Would

steam heater and heat the water in summer? I should be glad to receive some assistance in the method of piping such a plant. I am thinking of putting a coil of $\frac{1}{2}$ -inch iron pipe in two parts, each 3 feet long inside of the fire chamber of the boiler, which is brick set.

Utilizing Artesian Well Pressure.

From G. L., West Virginia—I have an artesian well, and it has a pressure of 85 pounds to the square inch, its flow of water about filling a $\frac{1}{2}$ -inch pipe. I would like to know if this water can be utilized to carry the water out of a mine situated about 25 yards from the well and 35 feet deep, a 1-inch pipe being large enough to carry off all the water from the mine.

Note.—Our correspondent can undoubtedly make use of the high pressure of his artesian well supply to remove the water from the adjacent mine but the best method of accomplishing that result we will leave to the discussion of our readers. We would suggest, however, that some of the automatic

cellar drainers which are operated by water power might be useful in this connection. Another plan would be to run a water motor attached to a pump. This is an interesting topic, however, and we will leave it to the discussion of our readers.

A Plea for Temperance.

From VETERAN.—I was pleased to read your editorial in a recent issue on "Hobbies." It contained a great deal of useful thought in a few words. Especially I liked the reference to old men, to which class I belong, and can testify that I would be living a very unsatisfactory life if I had not a hobby. After "going through the mill" and knowing much from my own experience I am almost a crank on the subject of temperance as it applies to business men and their dealings with employees. No concern, large or small, escapes the evil of the drink habit, and too many men who could use a good influence with their workmen fail to do so from the fact that it is tiresome and unpleasant to try to reform their men. Such persons fail to see that most drinking men can be got to moderation, if not abstinence, by a systematic course of kind reasoning, together with a lesson that carries a penalty with it, which the workman knows is his own fault. I refer to not allowing a man to do any work if he is in the least under the influence of drink. A day off means a fine of \$3 or \$5, and it is self imposed. How can any one expect to get a roof properly soldered by a man who is half boozed with beer? He will miss lots of small seams in corners and obscure places, and this applies to any other work as well. I know that it is not the object of *The Metal Worker* to teach morals, but I also know that the interests of both labor and capital are at stake on this subject, and I feel sure that much could be accomplished by studying the characteristics of different workmen and using the right words at the right time for the good of all, including the general public.

An Appreciative Reader.

From P. STAUFFER, Moberley, Mo.—As the time approaches when I am about to leave my apprenticeship in working at cornice making, I would like to tell of my experience in learning the trade. The first thing I did after entering the shop was to subscribe for *The Metal Worker*, reading it through every week, giving particular attention to the pattern problems it contained, and I am free to say that no boy learning the cornice trade should be without *The Metal Worker*. I found, however, that the patterns did not come fast enough in your paper, so I saved up my money for "The Metal Worker Pattern Book," which is a work of the greatest value. Instead of wasting my time in the evenings I would study the pattern book and work out its problems, having made a drawing board according to the directions given in the book. I soon was able to cut all ordinary patterns, and the proprietor, to test my skill, gave me a chance to cut a meter, which I did successfully, and soon got other and more difficult work to do. No boy in a cornice shop should have any idle time, for when not working he should procure the necessary books and study to advance himself in pattern cutting and designing.

Are Gravel Roofs Durable?

From G. D. B., Greenville, S. C.—There are in course of construction in this section several cotton mills, most of them having been designed by Northern architects, who specified that they should be covered with five ply tar and gravel roofing. We know little about the durability of gravel roofing and are seeking information as to its durability and comparative cost, and believe that there is no better medium than through the columns of *The Metal Worker*, with the editor's remarks and the opinions of the readers in various parts of the country. We would just as soon put on a tar and gravel roof for a customer as a tin roof if we knew how it would last, but from the nature of the material we can form no opinion as to its durability compared with a tin roof for the same price. We can put on a gravel roof for \$5 per square five ply, but can put on a better one of tin and make more money at \$4 per square. We have put tin roofs on cotton mills 20 years ago and they appear perfectly good to day. The chief objection to tin is the intense heat of the upper stories in summer. The writer has traveled some and has always observed the roofs used in the various cities. In Richmond, Baltimore, Philadelphia and New York we were struck with the great number of tin roofs. Cincinnati has quite a variety of roofs, mostly metal and slate. In Chicago hardly anything else is seen but gravel roofing. In the Gulf cities, Mobile, New Orleans, Galveston, and more particularly New Orleans, it was the exception to see a tin roof, nearly all of the roofs being of slate. This we suppose was to secure the water for drinking purposes. On the wharves there were quite a number of shell roofs, the shells being used instead of gravel on a tar roof.

Note.—We would call the attention of this correspondent to articles which appeared in *The Metal Worker* on gravel roofing on the 13th of October and the 1st of December. These do not give any information on either the cost or durability, but we hope our readers will give the result of their experience on both, as the information would be of value to a great many readers.

Heating Water by Electricity.

From J. R., Hoboken, N. J.—One of my customers has an office in a building which is heated by indirect steam and lighted by electricity. There is a lavatory in the office, but no means available for heating water, which he desires for lavatory use. Will some reader of *The Metal Worker* describe just how to proceed to heat water by electricity, using one of the incandescent lamps for the purpose? I know nothing of electricity, and hope sketches and description will be given so that I can get an electrician to do the work if necessary.

Making an Oil Tank.

From W. R. T., Waynetown, Ind.—I should like to know the proper way to make an oil tank with a partition in it for the retail oil trade, the tank to be 16 inches in diameter by 8 feet long. One of the compartments is to be filled with coal oil and the other with gasoline. My customer wants it made out of No. 20 galvanized iron. I would like to know the best way to put on the bottom and top, and also the posi-

tion of the pipes. It is to have two faucets and an air valve. What is the best size pipe to use?

Purifying Cistern Water.

From EAGLE & OTT, Ronceverte, W. Va.—We notice in *The Metal Worker* of February 2 an inquiry from "M. A. X.," Cane Creek, Tenn., asking for information about a method of cleaning cistern water without drawing off the water. We inclose you a circular of the Perfection water elevator and purifying pump, which we think will answer the inquiry.

Can Top Wanted.

From D. M. ALEXANDER, Westerville, Ohio.—Can any reader of *The Metal Worker* tell me where I can get a can screw that has a recess or groove in it for wax to make it air tight? I want to use it for maple syrup cans.

Cleaning Zinc.

From W. H. R.—Will you please inform me if there is any way to clean zinc?

Answer.—An answer previously published to this same question was as follows: A well-known recipe book says zinc is generally mechanically pickled by scouring with sand and powdered pumice. The bath used for brass is also very effectual; it is composed of one part of ordinary nitric acid and one part of sulphuric acid and must be washed off with clean water. To larger articles which cannot be dipped in the bath of acid and water apply a solution of potassium ammonium tartrate thickened with sufficient clay to form a fluid paste. After a few hours rub the article with a brush dipped occasionally into fine sand moistened with the pickle, then polish with powdered charcoal or Vienna lime.

Enameling Gasoline Stoves.

From W. R. T., Waynetown, Ind.—I would like to inquire through *The Metal Worker* for the best way of re-enameling gasoline stoves. There is an increasing demand for this kind of work and I should like to know how to do it.

Insurance Rates on Gasoline Stoves.

From W. & T., Northville, N. Y.—Replying to "C. P. A.," Port Ewen, N. Y., whose letter appeared in *The Metal Worker* of February 2, we are using a gasoline fire pot in our shop and do not have to pay extra insurance. Our rate is \$16.60 per \$1000. We asked our agent for a permit to use the gasoline fire pot, and he said, after seeing the pot, that we did not need one.

Anti-Freezing Mortar.

From C. S. L., New Jersey.—Please inform me if there is not a recipe for making mortar for cellar walls that will not freeze. Is not salt sometimes used in Canada for this purpose, and if so what are the proportions?

PLUMBING and GAS FITTING.

Example of Faulty Plumbing.

From H. D., New York.—Inclosed you will find a sketch showing a sample of plumbing work which has recently come to my notice and which, in my opinion, reflects seriously on the intelligence of the parties having the supervision of the work. The defective portion consists of the connecting of the waste from the tubs below the inside crown of the sink trap, therefore caus-

Supply," in *The Metal Worker*, January 12. Major Middlebrook of Bridgeport and Mr. Brown are old acquaintances and authorities on hydraulic ram work.

Sanitation.*

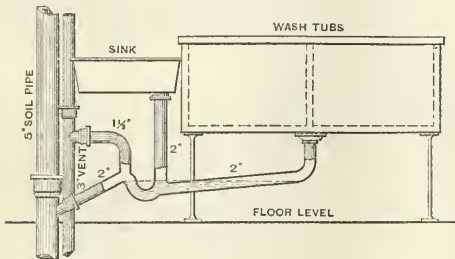
BY ROBERT MORGAN.

Out of the vast number of questions pressing upon civilized communities for recognition and solution, none is more

Do they? The rich man can afford to pay for all such appliances as tend to secure these blessings for himself, and he may select any location to build his home that he chooses, but the very poor have neither the power nor the means to get an equal share with their favored brethren. They must take what their small means will enable them to pay for, and that is so little as to astonish us when we come to know about it.

Look at the sanitary conditions of the tenement house district of almost any populous city. What are the provisions for ventilation, for bathing, for drainage? Mostly conspicuous by their absence or inadequacy. And yet the very poor usually pay more in proportion for two small rooms in such barracks as these than a man of moderate means pays for three times the number of rooms furnished with some sanitary appliances. No use to blame architects for the ill-constructed buildings and bad drainage referred to. Probably no architect ever saw a plan of most of them. When houses are unfit for occupation by reason of their lack of sanitation the strong arm of the law should be applied to effect a remedy. If every man who loves his fellow man would lift up his voice to protest against this injustice to man the local or State government would soon find means to compel the renovation of unsanitary buildings, the erection of new ones on sanitary principles and the provision of ample public baths in neighborhoods where private baths are unknown because too costly for tenement house purposes. Cleanliness may not promote godliness, but it will tend toward self respect and consequent morality. A house becomes more valuable by making the plumbing and drainage perfect, so the landlord reaps a benefit as well as the tenant, and where the owner refuses to place his houses in proper sanitary condition the law should step in and either compel him to do so or deny him the privilege of renting them.

Another point that needs restriction by law is the practice in large cities of constructing buildings of excessive height, resulting in many instances in the complete exclusion of the direct rays of sunlight where the streets are narrow, leaving them little better than damp, unwholesome passages. Allow the gutters of such dark streets to become the receptacles of refuse, as so often happens in large cities, and they soon become the breeding places for fevers, diphtheria, &c. Street cleaning, though supposed to be regulated by law, is too often a farce. It has been remarked that we have as good laws as any nation, but the trouble is that they are not always enforced. I believe that the construction of lavatories and toilets similar to those under ground in the city of London, placed in crowded centers of trade, with an attendant in charge of each, would be a means conducive to health. Much might be done to improve the sanitary condition of the pavements in cities. Any pavement that is not water proof will absorb refuse matter and become a menace to health. The question of disposing of

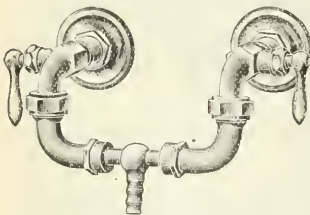


Example of Faulty Plumbing.

ing a larger amount of stagnant water to remain in the pipes than is necessary. The diagram will make this very clear to the uninitiated. Further comment is unnecessary.

Kelly Extension Slip Joint Connection.

We show in the accompanying illustration a device recently invented by Thomas Kelly & Brothers, 124 Franklin street, Chicago, Ill. The connection is used to unify two single bath cocks, and so convert them into a combination or double bath cock. No solder or fitting is required, for by screwing up



The Kelly Extension Slip Joint Connection.

the nuts a rubber ring is extended. It can, we understand, be made so tight by hand that it cannot be pulled off. The joint is 6 inches when closed, and will extend to 9 inches when opened full. Messrs. Kelly & Brothers saw the necessity of a connection of this kind when they introduced their shower bath ring.

AN ERROR was made in the name of A. L. Brown, Norfolk, Conn., in the description of "A Suburban Water

urgent in its demands, or more inexorable in its revenge if neglected, than sanitation. If met with proper consideration and its demands complied with, it becomes a most powerful ally in the cause of civilization and progress. Disregard its commands and it becomes a merciless scourger, destroying alike the helpless infant and the ignorant or neglectful adult. Where large communities are congregated together its demands are most imperative and in these later days our ears have been opened to its warnings. The chemist in his laboratory, the physician in his office or in our homes, the plumber in his daily round of business have taken up the warning note and already people in all quarters are heeding the cry. Humanity calls loudly for the protection and preservation of health, without which life itself loses its value and its charm.

There are "many gates to death," but few are left wider open than those leading to the dwellings of mankind when unlocked by such skeleton keys as foul gases, bad air, impure water, &c. Is it not astonishing that while nations will draw heavily on the resources of their countries to train men in the arts of war for the purpose of protecting life and property from the ravages of the enemy, they do almost nothing to teach the people how to protect themselves against the constant ravages of disease and death? Where are the magnificent sanitary science halls erected by the Government where willing students perfect themselves in the knowledge of sanitary engineering and plumbing? It was no doubt the design of an Allwise Being that all men, rich or poor, should share alike in the enjoyment of pure air and pure water.

* Presented at the Waterbury convention of the Connecticut State Association of Master Plumbers, February 6, 1895.

garbage is now occupying the attention of scientists and humanitarians. Thus far, no better, cleaner or safer way has been devised than burning, which not only commends itself as being a sanitary measure, but economical as well, when the health of the people is taken into consideration.

A constant and sufficient supply of good water is of the first importance to every community. A high standard of health can only be attained by a good degree of cleanliness, and cleanliness can only be preserved by a free use of water, and free use does not necessarily mean waste. Water at public drinking places should be carefully filtered and the filters should be cleansed at frequent intervals. The reading and thinking public is already awake to the requirements of sanitation. But what is to be done with those who will not read or think, since there is no law that I know of to compel people to save their own lives? However, I should say place baths and sanitary appliances within the reach of all, and man being an imitative being he will be likely to follow the example of others and thus get the good which he has not the knowledge to demand. Nor do I believe that the construction and maintenance of public baths in the tenement house districts by cities would add greatly to taxes. The first cost would be considerable, but the returns in lessened expense of maintaining almshouses and prisons would be something. Nothing is so expensive as crime, and filth tends to degrade, and degradation leads to crime. Cleanliness stimulates self respect and tends to good citizenship. If we make laws to restrain and prevent crime, why not also furnish means to elevate and purify character?

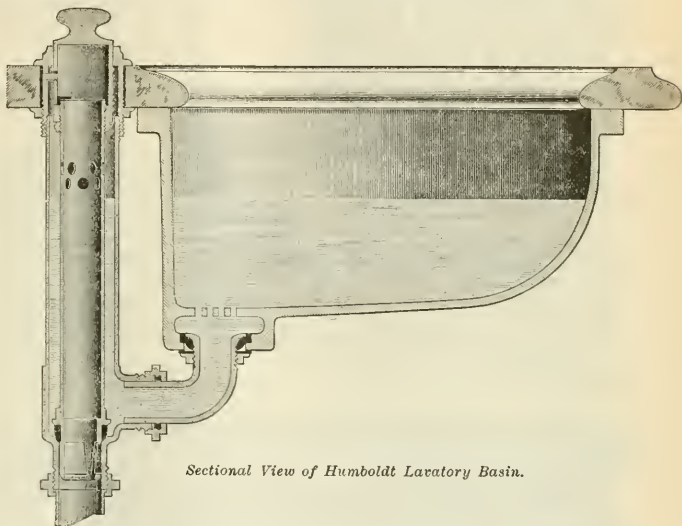
The introduction of the study of hygiene into the public schools will in a few years bring about desirable practical results. It has been said that a plumber cannot afford to be a reformer. Is it true that our profession is to us but a matter of dollars and cents? Have we then no interest in our fellow man except to find our way neatly and directly to his purse? Shall we allow such a stigma to rest upon us? Let us stamp out whatever of avarice and ignorance in our ranks may have led others to believe that we are not at heart just as desirous of progress and reform in the plumbing trade as any critic could wish us to be. Then, having conquered, let us place ourselves in the vanguard of humanitarians and be heard loudly knocking at the doors of legislative halls, urging the passage of such laws as will compel men—landlords and plumbers alike—to consider the health of the communities which they desire to serve.

In some places the aid of the law has been invoked, chiefly through the efforts of Health Boards and plumbers, to oblige a compliance with such sanitary conditions as will best secure the health of the people. Let us unite in the endeavor to carry the good work still further and aim to secure such legislation as will oblige all persons engaged in plumbing work to be thoroughly and practically qualified to do their work in a manner to prevent disease and preserve health. When all plumbers make united effort to uphold only the best work, then, and not till then, will our trade become an honorable profession.

The examination of those who wish to do plumbing, by a competent board, and their registration, together with the issuance of certificates to those candidates who passed satisfactory examinations, would, no doubt, secure almost

immediate improvement not alone in sanitary methods, but in the execution of the work. A plumber should understand not only the practical part of his work, but the theoretical part also, and be able to give a sufficient reason for the construction of every part of his work. To quote the language of another: "As the wave of popular interest in plumbing is sweeping over the land, I would strongly advise the young apprentice to put forth his best efforts to acquire a full and complete knowledge of the craft, and not to rest satisfied until he can not only give a satisfactory reason for every process of his work but also illustrate it with his pen and pencil."

Much poor material is now to be found in the market and many people resort to the penny wise method of using it, consoling themselves with the reflection that, after all, it may wear just as well as the more expensive. This is a kind of logic that appeals powerfully to some persons who put up houses to



Sectional View of Humboldt Lavatory Basin.

rent, but experience is teaching them that the putting in of poor material must always result disastrously in the end, both to the health of the tenant and the purse of the landlord.

The Humboldt Lavatory Basin.

The sectional view herewith given shows the Humboldt lavatory basin, made by Sumner & Goodwin, 21 Oliver street, Boston, Mass. The basin, it is stated, has no nickel plated work exposed in the fixture, and consequently there is no tarnishing or wearing away of the metal. A particular advantage to which attention is directed is that there is very little surface between the perforations at the bottom of the basin and the waste at the back to foul. The disagreeableness, if not absolute danger, of a large fouling surface between the fixture and the trap is becoming more and more recognized, and the reduction of this surface so far as possible is an advantage that will be generally appreciated.

T. F. MULLARKEY, Gloversville, N. Y., has resumed the plumbing business at the place formerly occupied by the firm of Mullarkey & Senior.

New York Master Plumbers.

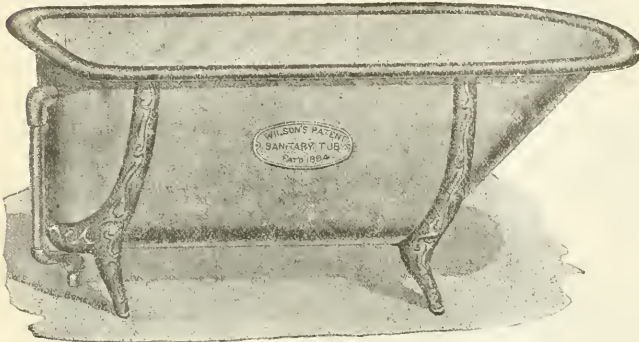
The annual ball of the Association of Master Plumbers of the City of New York was held in the Lexington Avenue Opera House on February 12. The committee of arrangements, John Yule, Thomas J. Cummings, Thomas J. Tuomey, Charles Schloesser and Milton Schnaier, provided a very enjoyable entertainment for the early part of the evening with quartettes and solos. An impersonator appeared as Gen. Geo. D. Scott, John Price, T. J. McCormack and Alderman J. G. Collins in quick succession to the amusement of these gentlemen and the audience. Among the guests were John Mitchell, president of the National Association of Master Plumbers, United States Marshal J. H. McCarthy and Wm. P. Mitchell from New York; Thomas H. Radcliffe, Wm. J. Gault, E. McDonald and H. M. Noble from Brooklyn. All of the guests were accompanied by ladies as were the members, and after

the entertainment the orchestra began an elaborate dancing programme. The ball was opened by John Yule. The members present with their wives, daughters and friends were: Milton Schnaier, chairman of the Floor Committee; Henry G. Gabay, Thomas F. Gaynor, J. G. Collins, C. Tucker, I. Brown, J. Tuomey, T. R. Delacey, J. M. Morton, Gustav Staats, Charles Beck, Benjamin Chambers, Paul Euell, Leonard D. Hosford, David Kennedy, Abraham Levon, James Muir, William McDermott, James McEntee, H. J. Pattison, I. Reynolds, John Regan, John J. Sullivan, William Young, William Bryan, Thomas F. Byrne, Samuel Cameron, Peter Carroll, T. J. McCormack, P. J. Carpenter, T. J. Cummings, J. P. Knight, J. Ryan, J. J. Deleahanty, P. Green, Jonas A. Rossman, John Byrne, Alexander Bryant, James R. Corbitt, Walter G. Gersty, C. H. Kranichfelt, William Kirchhof, Josiah Lindsay, Samuel Malcolm, John F. McKeon, Joseph O'Brien, William H. Quick, John Rinehan, Michael Ryan, John Tucker, Paul S. Bolger, Oliver Barratt, Benjamin Chambers, J. A. Chambers, L. H. Stroh, P. J. Andrews, William R. Bracken, Philip Brady, Alexander Cameron, John Boyd, James Gilroy, William Vail, Adam Huston, George W. Flood,

John Spence, David Jackson, Thomas Brady, J. H. Connolly, John S. Dunn, Ferdinand Ehrhardt, Frank Eberhardt, William Forster, James Fay, John H. Graham, John F. Murr, William Messer, James O'Brien, Charles A. Walsh, Thomas J. Tuomey, J. M. Sullivan, B. J. Smith, Frank Flanagan, Patrick Brady, Thomas J. Byrne, Francis Callaghan, Colin Campbell, George D. Scott, James N. Knight, John Ford, John Hindley, William Martin, John Miller, George B. Brown, James Armstrong, William J. Crow, Paul G. Decker, Thomas Ennis, George F. Efort, Cauldwell Fraser, Benjamin Forster, Edward Murphy, Edwin A. Moody, William Montgomery, John D. Page, Charles H. Treat, John Smith, Charles Schloesser, Michael Hughes, Bartholomew Donohue.

A Copper Bathtub.

A new sanitary fixture that has just been put on the market is an all copper bathtub, shown in the accompanying picture, made by R. M. Wilson, Rome, N. Y., and displayed at the New York showroom at 92 Walker street. The tub is made of heavy weight sheet copper, so that it sustains the weight of the water and the bather without affecting its shape. It is claimed that a heavy man may jump into it without damage to the tub. On the inside the tub is heavily tinned, while the outside shows the copper in its natural color, under a coat of durable lacquer, presenting an attractive appearance. The tub may be painted any color and decorated to suit its surroundings. It is supported on ornamental cast iron legs that are bronzed. Each tub is supplied with a fixed waste and overflow, and is adapted to the use of standard bath cocks. Wood rims of any wood required are provided. The tub is placed on the market at a price that should prove



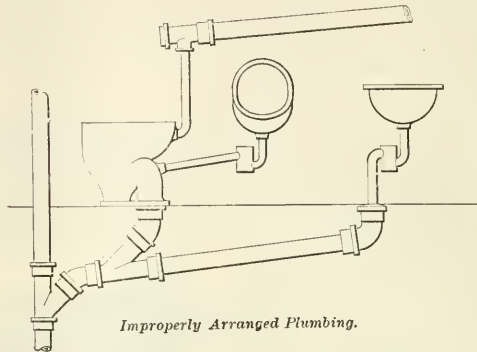
A Copper Bathtub.

popular, and being an exposed or open work fixture it has much to recommend it in appearance and cleanliness.

Improperly Arranged Plumbing.

From F. A., Connecticut.—I send you a rough sketch of plumbing work that has just been completed in a new building. It will be seen that the waste from the urinal runs into the trap vent of the water closet and that the traps are not ventilated. The seat vent runs into a flue. I should like to know if this can be called correct plumbing?

Answer.—The system shown is open to many criticisms. In some sections the seat vent is never used, while in others it is connected with a heated flue. It is generally considered that a first class job of plumbing should have its traps ventilated. A novel economy is effected by connecting the urinal



Improperly Arranged Plumbing.

waste with the closet, as shown, but it would not be considered good practice. In the sketch the soil pipe is shown continued to full size to where the basin waste connects with it. This should not be. The soil pipe should be reduced to the size of the basin waste immediately after receiving the water closet waste. The waste from the urinal should connect with the waste from the basin. By the use of a pipe of the size of the waste of these two fixtures, a

TRAPS AND VENTS.

THE PLANT now under erection by the Victor Mfg. Company, at Blairsville, Pa., is nearly completed. The new concern will make a full line of porcelain enamel baths and enameled sanitary ware, also enameled specialties of every description. Their plant will be a very complete one, and will

include pattern shop and foundry. The concern received five acres of ground and a cash bonus from the citizens of Blairsville in consideration of their locating the plant at that place.

THE ECONOMICAL GAS GOVERNOR COMPANY have been incorporated at Chicago with a capital stock of \$250,000. The directors are Abijah O. Cooper, Frank C. Farnum and Edward L. Bradbury.

REPRESENTATIVE REINORHL of Lebanon, Pa., has introduced a bill to the legislature at Harrisburg to provide for a "Sanitary Day." The object is to arouse public interest in sanitary science, and through the co-operation of the Superintendent of Public Instruction and the State Board of Health to impress all with the necessity of cleanliness as a means of averting disease and preserving health.

J. BARTON has purchased the tinning and plumbing business of Frank Shay at Pine Plains, N. Y.

FREDERICK WEISS, Chicago, has bought the plumbing branch of Louis Back & Co.'s business.

HERBERT MORRIS and George Shainline, employees of Cowden & Zimmerman will form a co partnership and engage in the plumbing business in Conshohocken, Pa.

A SPECIAL COMMITTEE, composed of Chairman Mowe of the Plumbing Board, City Engineer McComb and Plumbing Inspector Kieff, has been appointed at Watertown, N. Y., for revision and consideration of several changes recommended in the plumbing rules and regulations as laid down by the local plumbing board, as suggested by their examination of the laws in force in Syracuse.

GRAND CROSSING PLUMBING COMPANY have been incorporated at Chicago with a capital stock of \$1000. The incorporators are Parke E. Simmons, Guy C. Murray and Ernest Rutishauser.

THE ANNUAL MEETING of the Master Plumbers' Association of Worcester Mass., was held at the Builders' Exchange last week, and the following

good flush will be insured each time the fixture is in use. If there are no fixtures attached to the vertical soil pipe above those shown in the sketch, it may be used as a vent pipe. A separate pipe, the same size as the waste used with the fixture, should be taken from the top of each trap and carried to a point that is higher than the fixture, and then run over and connected with the vertical soil pipe. If other fixtures are located on this pipe above those shown, the air pipe must be run above them to the soil pipe or carried through the roof.

officers were elected for the ensuing year: President, C. C. Reed; first vice-president, C. A. Middlemas; second vice-president, F. J. Briden; secretary, J. J. Crean; treasurer, O. S. Kendall.

GEO. A. FUCHS, Fort Madison, Iowa, has sold out his plumbing business to the Fort Madison Plumbing Company.

W. F. DOWD & Co., Raleigh, N. C., is the style of a new firm who will open a plumbing business. Mr. Dowd comes from Charlotte.

THE PLUMBING SHOP of Charles G. Carmine, Baltimore, Md., was damaged by fire last week.

THE FOLLOWING PLUMBERS of Jamestown, N. Y., have complied with the law and registered with the clerk of the Board of Health: Frank M. Stearns, Carl J. Berry, Martin J. Murray, Charles T. Taylor, Fred E. Underwood, George A. Chatfield, John F. Smith, Jonas Woodhead, John Conway and A. A. Stewart.

THE ANNUAL CONVENTION of the Master Plumbers' Association of the State of New York will be held in Troy, N. Y., Thursday and Friday, March 7 and 8, and the committee appointed by the local association are now busily engaged making the arrangements. The convention will probably be held in Harmony Hall, and the first day's proceedings will be followed by a banquet.

D. J. CARROL, President of the Alberene Stone Company, has been in Chicago for a few days.

WILLIAM W. GRAY has recently started a plumbing and heating business at Chatham, N. Y., with a full assortment of plumbing fixtures and Bolton Heaters.

THE ANNUAL CONVENTION of the Master Plumbers of Rhode Island was held at Pawtucket last Thursday. John Trainor of Baltimore and one of the executive committee of the National Association of Master Plumbers was one of the guests.

THE FIRM of Haage & Tomney, Reading, Pa., plumbers, will be dissolved after April 1. The business will be continued by Mr. Haage.

A BRANCH of the well-known firm of Crawford & Young, plumbers, of 321 Warren street, Boston, Mass., has been established at 18 Post Office square, Roxbury, Mass., formerly occupied by J. H. Baguley, plumber.

C. H. GREEN, South Bethlehem, Pa., had a slight fire at his plumbing shop last week.

THE MASTER PLUMBERS' ASSOCIATION of Salem, Mass., met last week and elected the following officers for 1895: President, F. A. Wendell; first vice-president, E. G. Kelley of Peabody; second vice-president, D. S. Ingersoll of Beverly; secretary, James Trow; treasurer, J. F. Andrews.

THE PLUMBING WAREHOUSE of Leighton, Davenport & Co., Bangor, Me., sustained considerable damage by fire last week.

J. G. YOUNG, hardware dealer, Bellevue, Iowa, has added a plumbing department to his hardware establishment, and would like catalogues and price lists from dealers in plumbing supplies.

JAMES GRAY, East Albany, N. Y., was a visitor at *The Metal Worker* office this week. Mr. Gray is the patentee of

an extension sink bracket, and manufactures a number of plumbers' cast iron specialties.

IN THE LAST ISSUE of *The Metal Worker* we alluded to the formation of the John W. Mills Company, 100 Lake street, Chicago, to do steam and hot water heating work, but omitted to state that they would also follow the business of contracting in ventilating work and sanitary plumbing.

THE E. STEBBINS MFG. CO., Brighton, Mass., send a calendar upon which attention is called to their extensive line of brass faucets. These are referred to as being of the highest grade and as adapted to use in modern plumbing.

THE PLUMBING ESTABLISHMENT of W. S. Molo, Dubuque, Iowa, was visited by fire last week.

THE NEW FIRM of Carter & Co., plumbers, have their offices in the Reich Building, Brighton street, New Brighton, Pa.

W. A. FAUST, 3 Cron street, Pittston, Pa., is a new plumber, steam and gas fitter in that city.

EDWARD P. WILLIAMS, a member of the firm of Williams & Calhoun, plumbers, Amsterdam, N. Y., died last Saturday evening of typhoid fever.

PLANS have been completed for a four-story brick factory on American street, below Columbia avenue, Philadelphia, for Fleck Bros., manufacturers of plumbers' materials. The building will have a frontage of 22 feet on American street, and will extend back 123 feet to Philip street. A siding will be laid into the building from the Reading tracks, and the factory will contain improved machinery.

GOULD & NOWLEN, Bath, N. Y., will open a branch plumbing establishment at Hammondsport in the near future.

THE FOURTH ANNUAL CONVENTION of the Ohio State Association of Master Plumbers will be held at Columbus, commencing on February 26 at 10 a. m. Smith's hotel will be the headquarters.

Massachusetts Master Plumbers.

The seventh quarterly convention of the Massachusetts State Association of Master Plumbers was held in Boston on February 12. The business meeting was held in Elks' Hall, and was followed in the evening by a banquet at the Crawford House, which was one of the most enjoyable events in the history of the State Association, it being characterized by a thoroughly representative gathering of the members of the craft, an elaborate dinner, charming music and timely speeches. The convention which preceded it was notable for the large attendance and the many important matters acted upon. The principal feature of the meeting was the discussion and denunciation of the efforts now being made by certain parties to change the present plumbing laws of the State. These attempts were declared dangerous to the public welfare and the interests of the plumbing trade.

It was 6 o'clock when the delegates and guests filed into one of the large dining rooms of the Crawford House. There were about 200 master plumbers present. David Smith, president of the local association, sat at the head of the table, having on either side the invited guests, among whom were Capt. John S. Damrell and leading representatives

of the plumbing trade, manufacturers and dealers. An orchestra rendered delightful music during the banquet. When cigars were lighted President Smith called the gathering to order and extended a cordial welcome to the visiting delegates. He then introduced as the first speaker John Trainor of Baltimore, ex-president of the National Association.

Mr. Trainor, who was received with prolonged applause, made a timely speech, dwelling upon the merits of the association and what it had accomplished since its existence.

The next speaker was Daniel G. Finerty, one of the best known men in the plumbing trade.

Capt. John S. Damrell spoke for Boston. He complimented the association on the showing and the progress it had made, and was given three cheers when he had finished.

Other speakers were president Mitchell, Wm. Lumb and Wm. Locke. One of the best speeches of the evening was that made by James F. Davlin of Somerville, whose remarks sparkled with wit and allusions to several master plumbers present. Daniel Shannon, secretary of the State Association, sang a song for the "boys," which was loudly applauded. Brief remarks were made by other representatives of the trade from all over the State, and the banquet was brought to a fitting close with the singing by all present of "Auld Lang Syne."

THE GILBERT & BARKER MFG. COMPANY are about to move their New York office to 82 John street, where, in addition to the Springfield gas machine and their line of gas appliances, they will have something new to show that will interest plumbers. It is a gas water heater which is intended to take the place of a waterback and boiler, and can be connected with the water service pipe under any pressure. By opening and closing any of the faucets on the hot water service the heater is lighted and water at 120 to 130 degrees is delivered at the rate of 1 gallon per minute.

The agricultural interests of Florida have experienced a crushing loss by the almost unexampled freeze of last week, following on that of six weeks ago. The best authorities estimate that 75 per cent. of the orange trees in the State have been killed, with two-thirds of the pineapple plants and nearly all the early vegetables. Altogether the loss to growers on the peninsula is computed to be not less than \$15,000,000. Next year's orange crop, which was estimated at 6,500,000 boxes, will not, it is predicted, fill more than 100,000 boxes. California has escaped the cold wave, and her orange yield of about 2,800,000 boxes will accordingly bring the growers a handsome profit.

The value of merchandise exported last week from the port of New York shows a gain of \$2,400,000 over that of the previous week, when it touched the lowest point for the past two years. It was also considerably above the figures for the corresponding week of 1894, but the comparison with import figures exhibits a heavy balance of foreign trade against this country.

Austin Corbin, the railroad magnate, has, it is said, arranged to colonize 4000 acres of land in Chicot County, Ark., with Italians.

STEAM AND HOT WATER.

Mechanical vs. Natural Ventilation.

BY F. B. R.

The relative efficiency of mechanical methods of ventilation in which a fan is almost universally employed, and natural systems which depend for their action upon accelerating coils, is not generally appreciated. The losses in the process of making steam in the boiler, of transforming it into work in the engine, and therefrom developing the necessary air movement by means of the fan, are serious and the actual efficiency of the combination is very low. So low, in fact, that one who has not investigated the subject would hardly believe it possible that the blower is nevertheless the more economical of the two means named above. The operation of moving air by natural methods, by its very simplicity, is deceptive. Nothing can apparently be freer from complication than the process of heating air by means of a coil within the flue, thereby decreasing its density and creating an air movement from the apartment outward, because of the difference in the weight of two columns of air by equal height. It is upon this basis, however, that the capacity of a flue is determined, for it may be readily calculated from a knowledge of the internal and external temperatures, the height of the flue and the temperature within it.

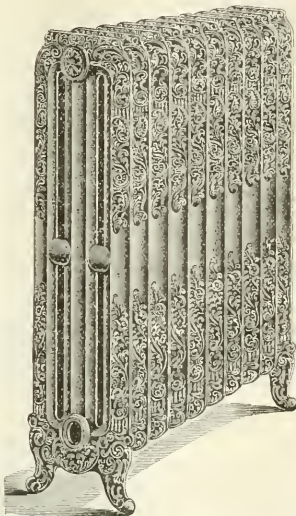
Under practical conditions the expense of moving the given volume of air may be best expressed in heat units. Thus, for instance, may be measured the steam condensed in an ordinary accelerating coil, for, knowing the increase in temperature of the air volume, we may readily inform ourselves regarding the number of heat units required therefor, and the consequent condensation of steam, the sole source of this heat. Likewise the actual power required to directly drive the fan may be ascertained, which, duly corrected for the losses of efficiency in engine and fan, may be easily expressed in heat units and compared with the expenditure for an equal air movement by the accelerating coil. Relative efficiencies between fan and coil will vary greatly with the necessary difference between flue and outdoor temperatures to produce the desired result by the so-called natural method. If this difference is slight the efficiency of the flue will approach nearer to that of the fan, but under all practical conditions the fan will be found to produce the given movement of air with from one-tenth to one-twentieth of the heat expenditure necessary with an accelerating coil. The heat added to the air in the flue in order to produce its movement is all deliberately wasted so far as heating is concerned, for it is supplied to the air after it leaves the apartment and is thrown away with it. The fan, however, may be applied as a portion of the heating system of which the other can form no direct part and compel the discharge of air from the building by the pressure maintained within.

In almost any case a fan blower can

be purchased and installed, not including motive power, for less than the cost of the accelerating coils it would displace. It combines within itself the capacity of all of the individual coils without the inconvenience of their separation and the difficulties of their proper operation. Of course the fan cannot be utilized in small buildings, owing to the usual lack of motive power and proper attention, but its advantages should certainly not be overlooked in those structures where ventilation on a large scale is desired.

The St. Louis Three-Column Radiator.

The illustration presented herewith shows the St. Louis three column radiator for steam and hot water, made by



The St. Louis Three-Column Radiator.

the St. Louis Radiator Mfg. Company, Union Trust Building, St. Louis, Mo. It is the specialty that the company are pushing, and they direct special attention to its handsome appearance, the design being in the Rococo style, as shown in the illustration. Particular claims are made for a large heating surface per section and the small amount of water it carries. The radiators are made in from 3 to 30 sections, measuring from 7½ to 75 inches. They are made in heights of 38, 32, 30, 26 and 20 inches, the three-section 30-inch radiator containing 12½ square feet of heating surface. The width of the sections is 9 inches.

C. R. MERES MFG. COMPANY, Norwalk, Ohio, are about putting on the market an apparatus which can be used for either steam or hot water in portable or brickset form. It is of the water tube construction, and arranged to se-

cure either a direct or indirect draft. The construction provides for an easy cleaning of the flues, and the heater is said to be very sensitive to the fire.

Ventilating Schools.

BY SAMUEL HEINS, RONDOUT, N. Y.

Reading over *The Metal Worker* of February 2 I see an article on Heating and Ventilation of Public Schools, written by T. J. Waters of Chicago. I would like to say a few words on the subject of ventilation of public schools, something which is of great importance for the benefit of the pupils and teachers. How many schoolhouses are thoroughly ventilated. I have invented a plan by which schoolrooms and all other rooms may be ventilated without any draft, and which distributes fresh air all over the room. This is a subject that all builders should give their especial attention to. How many children are sent home sick from school by inhaling the polluted atmosphere of unventilated schoolrooms, which I consider is the deadliest poison they could swallow. This subject excites much interest, and, as I said above, I have invented a plan which does away with drafts without any expensive appliance. It is extremely simple and cheap, and it continually renews the atmosphere without being felt by the occupants of the room. Two ordinary panes of window glass are placed in the upper frame of one or more windows, as follows: One pane, the outer one, is placed in the sash and held in place as usual by glazier points and putty. The only difference from an ordinary pane is that it is about 2 inches too short and raised that much from the bottom, leaving the lower edge free and being held in place by the end and the two sides. A second pane, the inner one, is placed against the molding of the same sash, which is always wide enough to admit of its being used for this purpose. This glass is also cut about 2 inches short, but is adjusted so that the open space is on top. This pane is held in position by the lower edge and the two sides. The space between the two panes should not be less than ½ inch. It is, however, regulated by the thickness of the frame work and the depth of the inner molding. The inner pane should be movable and so arranged that it may be taken down and replaced rapidly and without danger of breakage. This result is arrived at by placing over the edges of the inner pane a light U shaped rubber rim, which is arranged to have sufficient adherence to keep the pane firmly in place. The inner pane thus protected is then put in place, and secured to the molding by means of small clamps attached to the frame by small screws. For medium sized windows two clamps near each corner and one clamp on each side near the center. It may be that the pane should be cut so that the rubber rim rests against the frame, then by special clamps the pane is held firmly in place and cannot rattle or break. This system of ventilation, with its parallel glass panes and opposite openings, di-

rects a continuous stream of air vertically toward the ceiling of the room, which accounts for the excellent results of this contrivance, and ventilates or airs a room without the least draft. By this arrangement all the pure air needed is secured and there is no foul air left in the room. The inmates do not have languor, headache or lassitude of body. I would recommend that boards of education adopt this simple method. The expenses would be very little and it would save the health of teachers and pupils. I hope this will begin space in your valuable paper for the benefit of the public.

Determining Heating Power of Heating Systems.

From SUBSCRIBER, Winnipeg, Manitoba.—In *The Metal Worker* of January 26 I notice a paper read by J. H. Kinealy before the American Society of Heating and Ventilating Engineers, on the heating power of heating systems, and as it is a topic of general interest to the trade I thought another method might be of interest to your readers. The following method is one which the writer has used with fair success for some time past.

Given a room 15x10x10 feet, with 25 square feet of exposed glass and 250 square feet of exposed 8 inch brick wall, to heat from zero to 70° above with an average temperature of 200° in the radiators, providing only one change. On calculation we find that this room requires about 7786 units of heat per hour to maintain its temperature at the required standard. The heat units emitted per square foot per hour by direct radiators, temperature 200°, with air in room at 70° above, are stated to be 246.13, so that $7786 \div 246.13 = 31.6$, the number of square feet required to heat this room thoroughly.

After installing the system as based on the above calculations, we find we cannot get weather colder than 10° above zero, and with this temperature we determine to test the system. Again taking the same room, but to heat from only 10° above zero to 70° above, we find that it requires only about 6674 units of heat per hour. But we have already placed in this room 31.6 square feet, so that we will now have to maintain this radiation at a temperature sufficiently high only to emit 6674 units of heat, the amount necessary to warm the room; $6674 \div 31.6 = 211.2$, the number of heat units each square foot of radiation will have to emit per hour. By referring to text books on heating we find that 211.2 units of heat are emitted per hour by water at 185.1°, so that 31.6 square feet of radiation at a temperature of 185.1° should heat the air in this room to 70° (external air 10° above zero), which if it does is all that is required of the system, and is a guarantee that it will heat to the conditions on which the calculations for its installation were based. Although involving a great deal more calculations than Mr. Kinealy's method, still it may be of some use to your readers. The result as obtained by Mr. Kinealy's method, as shown in Table I is 182°, a difference of 3.1° between the two methods.

PROFITABLE TRIPS to Washington, D. C., are made by John I. Leitch, manager of the New York office, at 206 Centre street, of the Standard Radiator Company, Buffalo, N. Y. He spent a part of this week there talking radiation with satisfactory results.

HEATING NOTES.

AT 89 CENTRE STREET, the New York office of John A. Scollay, 74 Myrtle avenue, Brooklyn, a variety of Y's, T's, three way Y's and special fittings for greenhouse work are displayed. A neat rack supports pipe from 1½ to 4 inch, showing the Scollay pipe joint, which can be used for the insertion of a new piece of pipe without the use of threads or couplings. Literature on the Scollay boiler for greenhouse heating is conspicuously displayed.

T. C. JOY & Co., Titusville, Pa., issue a notice to the trade that their new price list took effect February 1. They call attention to the fact that they have added to their already large assortment of radiators the Zenith, which they expect to be able to furnish by April 1. While advocating the flue type of radiator, they mention that those who desire the ordinary loop type can be supplied with the Orient loop apparatus.

THOMAS W. WEATHERED'S SONS are now comfortably settled at 141 Centre street, New York, displaying the Weathered hot water apparatus and greenhouse structural work. They have been delayed by the cold weather in the completion of the conservatory and heating plant for Senator Palmer at Larchmont. The changes made in the smaller sizes of their boilers in the fall have proven of advantage and popular with the trade.

PRESIDENT JOSEPH BOND of the American Radiator Company, Chicago, called at the New York office this week previous to embarking on the steamer "Teutonic" for Europe.

THOMAS E. CRONE Eastern manager of the American Boiler Company, at 94 Centre street, New York, was elected second vice-president of the company at the annual meeting, recently held at the main office in Chicago.

THE NIAGARA RADIATOR COMPANY, Buffalo, N. Y., are issuing a new radiator price-list the feature of which is the new goods mentioned. They are offering a new direct-indirect radiator and a new pin indirect radiator. They say that orders placed with them can be filled promptly and that their low radiators have proven very popular. The price-list can be had by those who have not received it, on application.

CLARENCE WOOLLEY, treasurer of the American Radiator Company, Chicago, is spending a few weeks in New York lending a helping hand at 92 Centre street. The Eastern headquarters has done a large trade during the last season.

THE HOLLAND RADIATOR & Mfg. COMPANY, 69 Centre street, New York, are showing a new column radiator having alternate side connections between the loops instead of the usual straight through central connection. They have received from Blake & Williams, South Fifth avenue, New York, an order for 11,000 feet of this radiator. George Aspiwall is now visiting the trade in the interest of the company.

CHARLES ARMSTRONG, secretary of the Armstrong Mfg. Company, Bridgeport, Conn., has assumed entire management of the company's business of making pipe cutting and threading hand tools and machinery. H. E. French, the former manager, resigned the position and has been elected secretary of the Acme Shear Company of the same city and will superintend the manufacture of the Acme line of scissors, shears and tinners' snips and shears.

THE HERENDEN MFG. COMPANY have removed their Western office from 131 Lake street, Chicago, to a large and commodious store at 52 Dearborn street, where their Western manager, A. G. King, expects to show a large line of faultless Furman boilers, radiators and steam fitting supplies.

W. M. MACKAY, 211 Water street, New York, manager of the steam and hot water department of Hart & Crouse, Utica, N. Y., spent the week in New England in the interest of the line of Royal steam and hot water heaters.

GEORGE C. BLACKMORE of the United States Radiator Company, Saltburg, Pa., will spend a few days among the trade in New York next week. He will have something new in a flue radiator to show.

W. F. COZZENS, St. Louis, has received a communication from T. M. Finney, for whom he installed a No. 56 Royal hot water apparatus, stating that he has satisfactorily heated 69,000 cubic feet of space when the mercury was from 11° to 17° below zero.

MAINS are to be laid in the streets of Terre Haute, Ind., by a company who will furnish steam for heating buildings. The exhaust steam from the electric light plant and street car company's boilers is to be used. The manner in which the pipes are protected from loss of heat and condensation of the steam is as follows: First there is a cast iron pipe of about 6 inches in diameter. This is covered with some kind of a patent wrapping and over all is drawn a hollowed pine log.

Southern Freight Rates.

The Louisville & Nashville Railroad Company have issued pig iron division tariff No. 36, taking effect February 1, giving rates on pig iron from Southern furnaces to points North and West. The rates to the more important points are given below:

To	From South Pittsburgh, Tenn.	Chattanooga, Tenn.	Birmingham, Ala., Dist. Tract.	Sheffield, Florence, Decatur, Ala., Rockdale and Napier, Tenn.
Alliance, Ohio.....	\$2.88	\$2.85	\$3.45	\$3.30
Anderson, Ind.....	2.65	2.75	3.00	2.75
Atchison, Kan.....	4.39	4.50	4.50	4.05
Belleville, Ill.....	2.39	2.50	2.75	2.30
Buffalo, N. Y.....	3.43	3.50	4.00	3.75
Chicago, Ill.....	2.30	2.40	2.50	2.30
Cleveland, Ohio.....	2.28	2.35	3.45	3.20
Cincinnati, Ohio.....	1.67	1.75	2.25	2.00
Davenport, Iowa.....	3.30	3.40	3.65	3.40
Des Moines, Iowa.....	2.70	2.85	3.05	2.80
DeKalb, Ill.....	2.60	3.00	3.25	3.00
Denver, Col.....	9.08	9.19	9.19	8.74
Des Moines, Iowa.....	4.02	5.05	3.25	4.85
Detroit, Mich.....	2.85	3.00	3.50	3.25
Duluth, Minn.....	4.77	4.85	5.10	4.85
Evansville, Ind.....	1.88	2.00	2.25	2.00
Hamilton, Ont.....	4.03	4.10	4.00	4.35
Indianapolis, Ind.....	2.30	2.40	2.50	2.30
Johnstown, Pa.....	3.73	3.80	3.90	4.05
Joliet, Ill.....	2.30	3.00	3.25	3.00
Kansas City, Mo.....	4.39	4.50	4.50	4.05
Massillon, Ohio.....	2.88	3.00	3.50	3.20
Milwaukee (all rail).....	3.35	3.45	3.70	3.45
Milwaukee (rail and water).....	2.95	3.05	3.30	3.05
Niles, Ohio.....	2.30	2.40	2.50	2.30
Pittsburgh, Pa.....	3.43	3.50	4.00	3.75
Salt Lake City, Utah.....	10.85	16.06	16.06	16.51
Springfield, Ohio.....	2.23	2.30	2.80	2.55
Springfield, Ill.....	2.85	2.95	3.30	2.95
St. Joseph, Mo.....	4.39	4.50	4.50	4.05
St. Louis, Mo.....	2.39	2.50	2.75	2.30
St. Paul, Minn.....	4.60	4.70	4.90	4.70
Superior, Wis.....	4.77	4.85	5.10	4.85
Terre Haute, Ind.....	2.49	2.50	2.75	2.50
Youngstown, Ohio.....	2.98	3.05	3.25	3.30
Zanesville, Ohio.....	2.98	3.05	3.25	3.40

The rates apply to carloads of not less than 17½ tons.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

THE CHECKLEY HOUSE at Prout's Neck, Maine, is to be remodeled at an expense of \$20,000 and to be supplied with a steam heating plant.

C. S. EAMES, Bridgeport, Conn., has the contract for plumbing J. S. Nash's house at Seaside Park and remodeling the Atlantic Hotel, also the plumbing and heating of E. T. Kirkland's house in New London.

THE NEW RESIDENCE of A. J. Hoyt, Norwalk, Conn., is heated by hot water, the plant being put in by the Bridgeport Steam Heating Company. The plumbing was done by the Jones & Hotchkiss Company.

THE NEW ENGLAND ENGINEERING COMPANY, Waterbury, Conn., are to erect a five-story building that will be heated by hot water.

FLEMING & Co., Brattleboro, Vt., have begun putting in the plumbing and steam heating apparatus at the new Holden & Martin factory.

E. W. PECK & Co., Birmingham, Conn., have secured the contract for placing a heating apparatus in the new residence of D. Bedient of Seymour.

AT A MEETING of the Court House Board of Toledo, Ohio, last week, it was decided to advertise for bids for heating the new Court House from plans which they approved.

WILLIAM F. COMFORT, Norristown, Pa., has secured the contract for plumbing and gas fitting in the house to be erected by School Director George B. Kite.

ROBERT MORGAN, New Haven, Conn., has the contract for the plumbing in the Masonic Home at Wallingford.

THE CONTRACT for heating and ventilating the Pullman Memorial Church at Albion, N. Y., was obtained by Hays & Falls, the well-known contractors at 290 State street, Rochester. The system of heating is that of indirect low pressure steam. There are two 20 horse-power horizontal steel tubular boilers, connected so that one or both may be used.

CHARLES KOSTLEVY, 218 West Eighteenth street, Chicago, has the contract for plumbing in the flat building of F. H. Links, 974 South California avenue.

DAVEY & SCHUMACHER, 454 Lincoln avenue, Chicago, have the contract for plumbing in the flat building of Charles A. Born, 401 Addison street.

OTTO W. HERRMANN, 419 West Fullerton street, Chicago, is to do the plumbing in the flat building of F. Sigman, 235 Linden street.

G. M. HAWTREE & Co., 6822 South Halsted street, Chicago, are to do the plumbing in the residences of Mrs. C. F. Crosby and M. A. Frasser, 1509-1511 Dakin street.

E. B. KAISER & Co., 161 Southport avenue, Chicago, have the contract for plumbing in the store and flat building of J. Bobel, Henderson and School streets.

HERZOG & KILLIAN, 2226 Archer avenue, have the contract for plumbing in the flat building of P. J. Busa, Forest avenue, near Thirty-sixth street.

JAMES J. EVANS, 4346 State street, Chicago, is to do the plumbing in the

residence of K. Thieltn, 4721 Atlantic street.

ARTHUR J. KEEFE, Vincennes avenue, near South Halsted street, Chicago, is to do the plumbing in the residence of O. E. Hough, 8616 South Morgan street.

WILLIAM C. BLETSCH, 1216 Belmont avenue, Chicago, has the contract for plumbing in the flat building of B. J. Regnall, 644 North street.

THE JOHN F. ALLES PLUMBING COMPANY, 233-235 Lincoln avenue, Chicago, have the contract for plumbing in the flat building of Charles A. Ashlerland, 1833 North Halsted street.

WILLIAM S. VERITY, 229 West Randolph street, Chicago, is to do the plumbing in the flat buildings of Samuel Brown, 120, 145-151 Cogrove avenue.

ALWIN W. BAHN, 393 Gross Park avenue, Chicago, is to do the plumbing in the residence of F. Zemann, Roscoe boulevard and Northern Western avenue.

KEHN BROS. & MERTZ, 289 Kinzie street, Chicago, are to install a steam heating plant in the factory building of Rueckheim Bros., Clinton and Harrison streets.

DANIEL GORDON, 562 Forty-fifth street, Chicago, is to do the plumbing in the store building of W. E. Spencer, 614 Sixty-third street.

J. H. BRADLEY, 8026 Vincennes avenue, Chicago, has the contract for plumbing in the flat building of J. D. Horton, 2704-2712 Deering street.

THE PLUMBING CONTRACT for the Algonquin Hotel at St. Andrews has been awarded to William Donovan of St. Stephen, Maine.

THE HANDSOME RESIDENCE which Captain P. A. Nickerson is building at Winchester, Mass., will be heated by an eight-section No. 320 Richmond steam boiler, which Edward E. Parker of Woburn will install.

THE JOHN W. MILLS COMPANY, 100 Lake street, Chicago, will place heating plants in the new residences of C. A. Hull, G. L. Heuser and Edward Davidson, all on the north side.

A. C. HICKEY, 69 South Clinton street, Chicago, is overhauling the plumbing work and steam heating plant in the Chicago Athletic Club Building, Michigan avenue.

THE SMITH & ANTHONY COMPANY, 219 Lake street, Chicago, are to place a Hub warm air heater in the residence of Charles H. Lawrence, Lake Forest, Ill.

COOK & CHICK, 253-255 Kinzie street, Chicago, are to install a steam heating plant in the Lincoln National Bank, North Clark and Michigan streets.

THE FOLLOWING PLANS for the construction of plumbing were filed at Inspector B-mis' office, Providence, R. I., during the week ending February 8, the names of owners being given first, the location next and plumbers last: City of Providence, corner Eddy and Henderson, Phillips & Phillips; P. Peckersham, 51 Lippitt, John S. Wright; Diamond Machine Company, Atwells avenue, R. Richardson; the Thomas Phillips Company, 91 South Main, the Thomas Phillips Company; Peter Simoni, 22 Brayton avenue, James A. Donnelly; Peter Peterson, 62 Glover, John T. McGinn; Franklin P. Rand, Adelaide avenue, Charles R. Blackmar; American Brewing Company, Harris

avenue and Eagle, D. Holmes & Co.; W. W. Ricker, Pacific avenue and Balch, E. Frank Carey & Co.; George M. Baker, 83 Page, John J. Shanley.

E. BAGGOT, 139 Adams street, Chicago, has the contract for plumbing in the Edison Company Building.

CONLON & MONTGOMERY, 33 Dearborn street, Chicago, have the contract for hot water heating in the residence of R. B. McMullen, Evanston, Ill.

M. L. MANDABLE, 258 Clark street, Chicago, is to do the plumbing, gas fitting and sewerage in the residence of F. Sherman, 547 North State street.

REPAIRS to the amount of \$7500 are recommended to be made to the heating and plumbing systems in two Government buildings at St. Louis, Mo.

A. B. FRANKLIN of Boston has secured the heating contract, and John F. Mulvey, Woonsocket, R. I., the plumbing contract for the new Court House at Woonsocket, R. I.

BIDS for heating and ventilating the Court House at Toledo, Ohio, will be received until March 12; for the powerhouse tunnel and smoke stack until March 27.

THE T. M. LUCY PLUMBING COMPANY, North Adams, Mass., are doing the plumbing and will put the heating apparatus in "Maplehurst," the summer residence of J. C. Newton at Wilmington, Vt. This company are also doing the plumbing in H. A. Adams' residence in Wilmington.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until March 12, for a low pressure steam heating and ventilating apparatus, including power boiler, &c., for the United States Post Office, Custom House, &c., Building at Jacksonville, Fla. Drawings and specifications may be had from the office of the Supervising Architect, Washington, or from the Superintendent at Jacksonville, Fla.

BOHN BROS. & KERN, Zanesville, Ohio, have secured the contract for the plumbing, gas fixtures and steam heating of the Richards-Van Voorhis Block.

The Correspondence School of Technology, Brainerd Block, Cleveland, Ohio, offers courses in applied electricity, steam engineering and transmission of power, surveying and roads, bridges, roofs and iron structures. The faculty of the school comprises a number of well-known engineers, covering all the branches alluded to. The school publishes a valuable little treatise entitled, "Hints to Engineers Operating Small Electric Light Plants," by E. P. Roberts and W. B. Stewart.

William C. Vosburgh, president of the W. C. Vosburgh Gas Fixture Mfg. Company of Brooklyn, N. Y., died of heart failure at his home, 229 Clermont avenue, Brooklyn on February 8, at the age of 68 years. Mr. Vosburgh was born at Hudson N. Y., and went into the gas fixture manufacturing business in Brooklyn in 1865. He established the company that bore his name, and built up a large business. In 1885 he organized the Brooklyn Gas Fixture Company, from which he retired in 1892. Later he established the Vosburgh & Birkett Gas Fixture Company, with works on Jay street. Mr. Vosburgh was very prominent in Republican circles and also socially. He leaves a wife and one daughter.

ROOFING AND CORNICE.

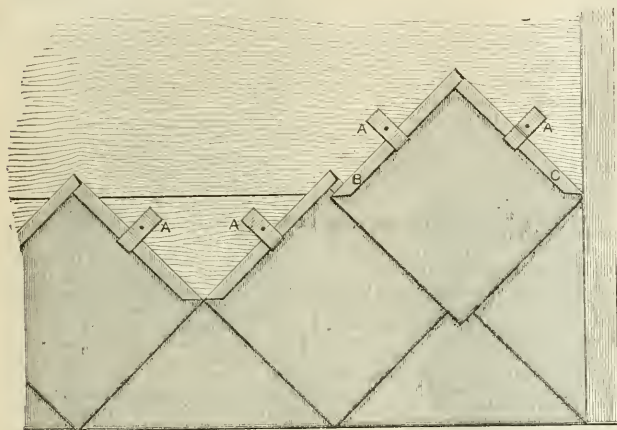
Looney's Zinc Shingles.

We illustrate herewith the zinc shingles manufactured by Looney & Co., Nevada, Mo., who have applied for a patent on them. Comparatively little interest has been taken in this country in the application of zinc for roofing purposes, and this adaptation of the material is therefore particularly noteworthy. The shingles have been put to practical trial, and Messrs. Looney & Co. advise us that they laid 103 squares of them on the new Public School Building at Webb City, Mo., and five

the shingle on the roof the lock E, Fig. 2, will engage with lock B, Fig. 1. As each shingle is put in place it is fastened by the cleats A A. The manufacturers especially refer to the way the upper corner is folded, which, it is claimed, is done in such a way as to keep out all water that may be driven up under the shingles.

Slate Items.

A SLATE MILL in Bangor, Pa., is working on an order for 4000 feet of finished slate to be used as shelving in



Looney's Zinc Shingles.—Fig. 1.—Showing a Section of Roof.

squares on the Webb City Milling Company's building, where they have been thoroughly tested with satisfactory results. The shingles at present are made from No. 12 zinc, and when laid are 12 inches square. The ordinary form of the shingle is square, as shown in the illustration, while for tower work the shingles are diamond shaped. The sheet metal is cut 14 inches square and the laps turned 1 inch each side, making, as above stated, the finished size of the shingle 1 square foot. In the accompanying engravings Fig. 1 is a section of roof with the shingles in place. A, A, are cleats which hold them down, the end of the cleat being turned over the lock of the shingle. B and C, Fig. 1, show the upper lock. In Fig. 2 the view of a single shingle is presented, illustrating more clearly the locking arrangement. The upper locks B' and C' correspond with B and C in Fig. 1, while D and E are the flanges or locks on the bottom of the shingle, as shown by the dotted lines. The width of the flanges is 1 inch, and the shingles are laid with $\frac{1}{2}$ inch play in the lock, so as to allow plenty of room for the contraction and expansion of the metal. The principal trouble, it will be remembered, with zinc has been its great variation at different temperatures. For this reason ample provision is made in the shingle illustrated. When laying

a public library at Chicago. It is the first known order of the kind.

THE SLATE SHIPMENTS from the Slatington, Pa., section during the week ending January 5, as reported in the *News*, were: 1768 squares roofing slate, 604 crates blackboards, 503 crates school slate, 6 bundles, 50 crates and 178 pieces flagging.

THE Great Bangor Slate Company of Bangor, Pa., have been incorporated with a capital stock of \$25,000.

IN REFERRING to the slate industry in that region, the *Pen Argyl Index* says: "The slate shipments from all sources in the Pen Argyl section in December, 1894, were: 91 carloads roofing slate, 2 cars and 119 crates slate slabs, and 273 crates blackboards. The total shipments of slate products of all kinds for the Pen Argyl quarries in 1894 were: 1519 carloads and 71 boxes roofing slate, 33 carloads and 1013 crates mill stock, 2 cars and 2109 crates blackboards, and 1 car school slate. The volume of business done at the various slate quarries and factories in Pen Argyl during the year 1894 shows a slight increase over that of the year 1893, which is an indication that the business is slowly reviving and that we may soon look for a restoration to the prosperous condition of affairs of 1892—the banner year for the slate industry."

FLASHINGS.

THE EIGHTH ANNUAL CATALOGUE AND PRICE LIST just issued by Rhodes, Dickelmaier & Co. of Forest, Ohio, is an attractive publication of 84 pages, bound in paper covers of deep green, carrying an embossed side title in old gold. Since the last edition of their catalogue was issued the company have reorganized the business, enlarging their working capital, adding several new departments and making sundry improvements in old ones, thus placing them in a better position than ever before for supplying the demands of the trade. In the early pages of the publication reference is made to the fact that the company's double fold lock seam, Struble's cap seam, standing pressed seam and roll and cap roofing, except when otherwise specially ordered, are made of genuine steel and not of iron. This steel is made especially for the company, being rerolled, box annealed and free from scales. The painting is done upon the grain of the metal, hence the makers claim it will not crack or peel off. The metal is thoroughly inspected and all imperfect sheets thrown out, the utmost care being maintained throughout. The goods illustrated and described cover a varied assortment, and in addition to the lines above mentioned include cluster tiling or shingles, clap or weather boarding, siding, sheet steel pressed brick, beaded and corrugated iron, patent slip joint reversible eave trough hangers of various kinds, corrugated expanding conductor pipe, elbows, rain water cut offs, roof gutters, ornamental ridgings, crown moldings, finials, ventilators, metallic cresting blocks, roof paints, &c. An interesting feature of the volume is found in the rules of

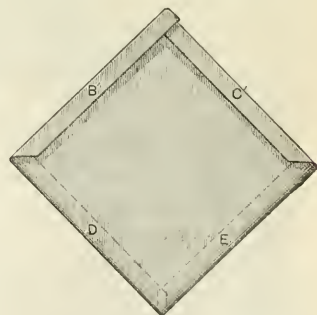


Fig. 2.—View of Shingle, Showing Locks.

measurement in selling sheet metal building material, and also rules for measuring after the material is applied to the building. There are also given suggestions to be observed in ordering goods.

GUMMEY, SPERING & Co., Philadelphia, in a recent communication, call attention to their special brand of "Waldo" hand dipped terne. This is a brand which the firm introduced to the roofing trade over 15 years ago, and

it has, they state, gained a great reputation throughout the country. They are now making these plates at their own tin plate works in Philadelphia, and are keeping them up to the same high standard of quality. They are referred to as American plates in every particular, including the iron and the labor employed in coating them.

THE JOHN SIDDOONS COMPANY of Rochester, New York, are now laying the Spanish tile and doing the copper work on the valley and gutters of the handsome new depot of the New York Central Railroad at Syracuse, New York.

WAGNER BROS., 1350 Diversey street, Chicago, Ill., have signed contracts for copper cornice and red slating for A. Waldman's residence on Diversey street, near Park avenue; copper cornice and galvanized iron work on F. Silling's three story flat and basement building, at 1715 Diversey street; galvanized iron work for C. P. Stevenson's building, Gross Park avenue and School street.

THE AMERICAN ROOFING COMPANY, St. Louis, report a good trade, and state that their January business showed an increase of over 50 per cent. In comparison with the corresponding month of last year. They report the Texas and coast trade as being particularly heavy. The Cincinnati factory of this concern is also well supplied with orders.

Sanitary Security Company.

The Sanitary Security Company, with main offices in the Lincoln Building, 1 and 3 Union Square, New York, have been organized under the laws of the State of New York to provide for the sanitary inspection and guaranteeing of buildings in the interests of either landlords or tenants. Naturally the real efficiency of such a company will depend upon the intelligence and trustworthiness of those having its work in charge. It is of especial interest therefore to note the number of eminent and well-known names comprised in the following list of officers and directors:

President, James C. Bayles, Ph.D., Past President Health Department, New York City.

Vice Presidents, George E. Waring, Jr., C. E., Commissioner of Street Cleaning, New York; Joseph H. Raymond, M. D., Past Health Commissioner, Brooklyn, N. Y.

Secretary and Attorney, Edward A. Sumner.

Treasurer, George R. Percy. Technical Consulting Staff: Sanitary Engineers, George E. Waring, Jr.; Waring, Chapman & Farquar. Bacteriologist, T. M. Prudden, M. D., Chief Department of Pathology, College of Physicians and Surgeons, New York. Chemist, Charles F. Chandler, Ph.D., Past President Health Department, New York. Engineer of Heating and Ventilation, A. R. Wolff, M. E.

Of Counsel, Sullivan & Cronwell.

Directors: J. C. Bayles, George E. Waring, Jr., Richard S. Treacy, W. H. B. Totten, Hon. D. W. R. James, Jos. H. Raymond, M. D.; Edward A. Sumner, Fredk. M. Dean, Geo. R. Percy.

The company offer their services to owners of real estate and to tenants, and their claims are clearly set forth in

the circulars they issue, the one addressed to the owners of real estate reading as follows:

The endless and vexatious contention between landlords and tenants over the sanitary appointments of leased buildings, involving questions which neither understand and concerning which it is difficult for either to obtain wise and disinterested advice, is the cause of much expense and annoyance to owners and of dissatisfaction to tenants. This contention is as unnecessary as it is undesirable. It is, moreover, expensive. As a rule the owner of real estate understands, or at least appreciates, his moral and legal responsibilities as a landlord and has no wish, by his negligence, to expose his tenant to risk of life or health. It is because he does not know, in most cases, how to discriminate between reasonable and unreasonable complaints, and has no convenient and trustworthy means of advising himself how to protect his own interests and serve those of his tenant at the same time, that necessary repairs and replacements are so often neglected and unnecessary expense so frequently incurred. If the landlord is complainant and obliging he is apt to be imposed upon—if the reverse the tenant is likely to make him as much trouble as possible. Much of the apparent unreasonableness of tenants is due to the fact that they are unintelligently apprehensive of dangers from supposed sanitary defects and attribute every illness and indisposition in their families to "sewerage poisoning." If, however, the tenant knows that his landlord is doing all that is right and proper, under competent and disinterested professional advice, and that every complaint he makes is given prompt attention, he will, as the rule, be satisfied and feel perfectly safe. When the sanitary care of a rented building is assumed by the Sanitary Security Company of New York, the owner is relieved of all further annoyance from complaints by tenants. If complaints of the condition of his premises reach him he refers them to us. If repairs or replacements are necessary, they are recommended; if not, the owner may safely decline to make them. Tenants are often very careless, and sometimes maliciously destructive of rented property; and their persistent violations of the provisions of the sanitary code frequently entail much trouble and expense to the owners before retelling is possible. Tenants can be required to take much better care of rented premises than they often do, and owners will thus be saved a large part of the annual cost of maintenance of rented property. Owners suffer much annoyance and loss from the vacation of houses by tenants, who allege the unsanitary condition of the premises as an excuse. This company will not guarantee rents, but in the case of buildings under their care they will, at their own cost, prosecute the owner's suit against a tenant vacating for this cause, and if they cannot get judgment against the tenant, will indemnify the owner for any loss he may suffer in consequence of such vacation. If the owner has put his building in a condition satisfactory to this company, and we become responsible for it, we will either vindicate him by getting judgment against the tenant, or we will indemnify him for loss of rent. The Sanitary Security Company of New York desire that the value of the service they offer to owners of property shall be judged solely by the standard of economy. We can save the owner of real estate many times the cost

of employing us, and we can materially assist him in securing, satisfying and retaining desirable tenants for desirable buildings.

The services they offer to occupants of rented buildings are explained as follows:

The worst conditions encountered in sanitary inspection are found in rented buildings. However well built originally, they are almost always found to have deteriorated during successive occupations until, from frequent patching and general neglect, they reach a condition which is a constant menace to life and health. If it were our purpose to create a popular panic the record of facts resulting from the sanitary inspection of rented dwellings, apartment houses, hotels and business buildings in and near New York would furnish ample material. As the rule, dwellings and places of business are hired with little or no inquiry as to their sanitary condition. If any questions are asked the answers cannot be expected to give information of value. The most dangerous defects in the sanitary condition of a building are not those likely to attract notice. What the tenant knows of the sanitary condition of a building he usually learns from experience after he has moved in, and this knowledge is sometimes gained at very serious cost. The Sanitary Security Company place at the command of tenants of all classes of buildings the means of guarding against original mistakes in selecting unsafe dwellings or places of business, and against such dangers as may result from the negligence of landlords in keeping their property in repair as to sanitary appointments. As the rule, we prefer relations with owners as under such relations all interests are best served; but in many cases the tenant is forced to adopt measures of self protection against the negligence of the owner or his representative. When such conditions are found to exist we will undertake the protection of the tenant by all legal and proper means. Under a contract with a tenant, we first make a thorough sanitary survey and inspection of the building he occupies. When conditions are found which involve danger to life and health, we undertake to move promptly in his interest and to exhaust all means for having such conditions remedied. We will hold the owner as closely to his responsibilities as the law permits, and will do all that can be done to protect the tenant. If at any time the premises are found in such condition that, in the judgment of our experts, they are unsafe for occupation, we will advise the tenant to move out; and if on our advice he follows this course, the Sanitary Security Company will defend any suit brought against him for rent after such vacation, and pay whatever the landlord may recover judgment for—provided, of course, such judgment shall not be for rent during the tenant's occupation. Our responsibility in the matter of rent does not begin until the tenant has vacated unsafe premises by our advice. We further undertake to protect our tenant clients, so far as practicable, against injury from remediable external nuisances. Under a contract with a tenant we will make four thorough inspections of his premises each year, and as many special inspections as may be warranted by the information he furnishes. So long as his house is under our care he may be sure that everything practicable is being done for his protection.

THE RETAIL STORE.

Empire Spraying Pumps.

Field Force Pump Company, Lockport, N. Y., are offering the spraying pumps shown in the accompanying

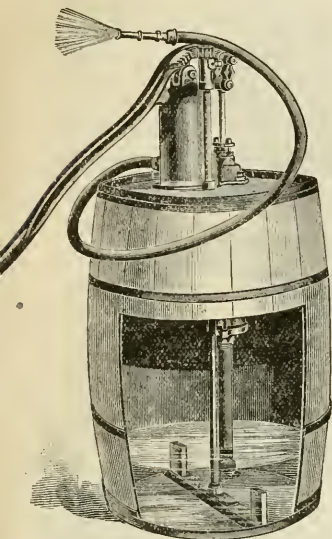


Fig. 1.—Empire Queen Spraying Pump.

cuts. The Queen pump, Fig. 1, has a seamless brass cylinder, with brass plunger and brass rod; also a brass

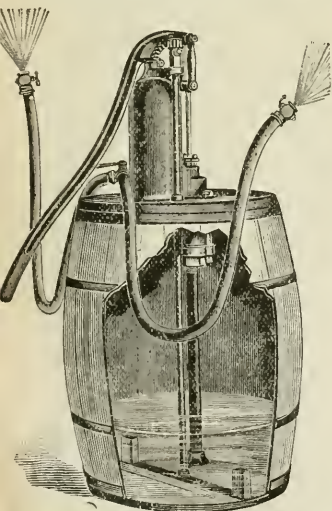


Fig. 2.—Empire King Spraying Pump.

screw spout, to which the hose is attached by a screw coupling. It is explained that the pump has a large air chamber, by means of which the spray is strong and continuous; also that 5

feet of hose and the company's graduated nozzle are furnished with the pump. It is further explained that the agitator works in connection with cogs from the lever, connecting with a companion gear at the upper end of a steel shaft, at the lower end of which is a horizontal wooden bar. Thus when the lever is moved upward or downward the agitator bar travels, it is stated, in a semicircle in the bottom of the barrel, and prevents the poison from settling. The pump is fur-

Rochester Mammoth Fount.

The Rochester Lamp Company, 43 Park place, New York, have brought out the New Rochester mammoth fount, as here shown. It embodies some of the essential features of the New Rochester table lamp, fully illustrated and described in these columns November 29 last. It has a thumb-screw wick lift, which can be operated from either the top or under side of the fount. The wick is lifted with a rotary



No. 10 Rochester Mammoth Fount.

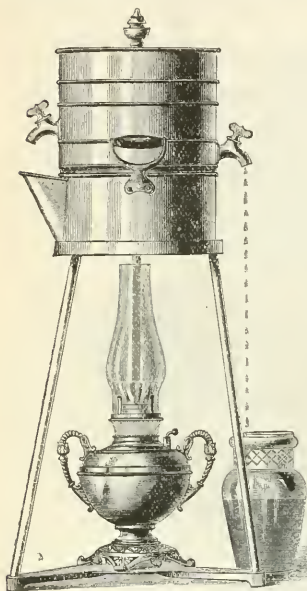
nished with a suction pipe, which is provided with a fine brass strainer at the lower end, to effectually prevent leaves or dirt from getting into the pump or nozzle. The manufacturers claim that the pump works easily, and it is guaranteed in every respect. The King pump, Fig. 2, is similar to the Queen, but larger. It has two Eureka spraying nozzles, with which two rows of trees or vines may be sprayed at the same time. The seamless brass cylinder is 8 inches long, having brass plunger and rod, and brass screw spout with a stop cock. It also has two 10-foot sections of heavy hose furnished with couplings which can be joined, making one continuous hose 20 feet in length. The pump is provided with the same kind of mechanical agitator as the Queen, a large air chamber and a tight cap for closing up either opening of the spout when but one nozzle is used. It is stated that the suction pipe is of galvanized iron, with a brass strainer, and that the pump has a long lever.

movement by means of a toothed wheel fixed rigidly to the center of the rod connecting the two circular thumb screws, giving a gradual and positive motion in raising or lowering. The teeth of the wheel engage a perforated wick lift. In lighting, the frame holding the chimney can be raised by operating the lever seen at the right, without removing the chimney. A larger inlet for oil is another advantage over the fount formerly made. The gallery (or top part) is screwed in, and by carrying the perforated metal up close around the wick tube there is now no dirt pocket and no chance for odors from refuse and wick clippings. The New Rochester double over cone is used, which gives a double circular flame and, it is said, a light equal to 400 candle power. A perforated wick lift is used, whereby the draw bar, with sleeve and wick, can be taken entirely out of the lamp. The fount is furnished in brass or nickel, is 10½ inches high from bottom to top of burner, holds a full gallon of oil, and will burn,

It is said, 10 to 12 hours. This fount is designed largely for stores, offices, churches, &c., where large volume of light is demanded. They can be hung in harps or swung in brackets.

Browne's Water Still.

A device for the convenient distillation of water for drinking purposes is that shown in the accompanying illustration. It is being manufactured by F. E. Browne of 314-316 South Spring street, Los Angeles, Cal. As shown in the engraving, the device consists of a stand, supporting an ordinary oil lamp, above which is the metal still. The latter consists of a boiler, having a conical cover around which projects a rim, forming a reservoir, which holds a supply of water to cool the cover and cause the steam which rises from the water



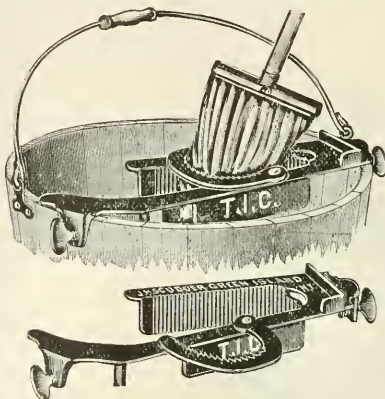
Browne's Water Still.

within the boiler to condense on the under side of the cover. By an ingenious arrangement the condensed water is collected and discharged through a faucet into a suitable vessel, as shown in the engraving. In its fall through the air the water is said to become thoroughly oxygenated. The still complete is 12 inches high, 9 inches in diameter and weighs 5 pounds. It is made of copper, tinned on the inside and nickel plated on the outside. The manufacturer guarantees this device to distill 1 gallon of water in three hours, and states that greater rapidity would prevent a thorough oxygenation of the water. The stand supporting the still and lamp consists of a tripod, with the lamp support arranged to slide up and down the legs and to be secured at any height so as to accommodate a short or tall lamp at a sufficient distance from the bottom of the still in order to secure the best results. Both the still and lamp attachment are portable and may be readily taken apart or put together. Mr. Browne refers to this device as a practical, ornamental still, which is effective in use, reasonable in

price and can be used upon any kind of stove, or in connection with the lamp which furnishes the light for evening work or pleasure, thus giving, without additional expense, a supply of pure water for the next day's use.

The T. I. C. Mop Wringer.

The illustration herewith shows the T. I. C. mop wringer recently put on the market by the Torrance Iron Company,

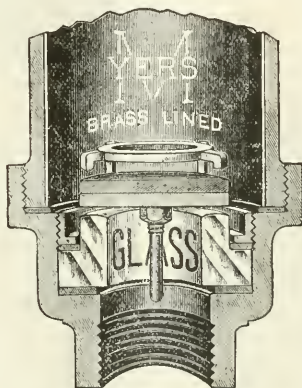


The T. I. C. Mop Wringer.

Troy, N. Y. It is a malleable casting that is adapted for securing to a pail by set screws. In use the mop is placed in the slot and the swinging piece swung around it. Then, by twisting the mop to the right and upward, the water is effectually wrung out of it. During the operation the pail and wringer are held by placing the foot of the user on the slot plate.

The Myers Improved Drop Valve.

F. E. Myers & Bro., Ashland, Ohio, are using the drop valve in connection with the glass valve seat in their pumps, as shown herewith. The glass



The Myers Improved Drop Valve.

seat is underlaid with a rubber gasket and is held firmly in place by a brass follower, drawn up tight, thus holding the glass seat in a reliable manner. The point is made that the valve seat is independent of anything else, and that it cannot be effected by the swinging of

the suction pipe, or become disarranged in taking the pump or cylinder apart. The manufacturers call attention to the fact that the glass valve seat is non-corrosive and is smoother and more perfect than a metallic seat; that it is extremely hard and does not throw off corrosives, and that the leather operating on the glass retains its softness. The company continue to make the glass valve seat in connection with the older form of leather pump valve,

hinged at the side, as is generally used by pump manufacturers with a metal valve seat.

New Enameled Ware.

Maurice Stransky of Stransky & Co., 27 Murray and 31 Warren streets, New York, returned to this city last week, arriving by the "Paris" February 2 from a six weeks' business trip to the Continent. This concern import largely Steel Enameled Ware for house furnishing, kitchen and culinary use. In his opinion the continued reduction in the price of this class of merchandise, necessitating a corresponding deterioration in quality, has been followed by a reaction among many buyers in favor of a higher standard of excellence at some increase in cost. With this in mind he has brought back with him a series of nine samples for dealers' and salesmen's purposes, resembling in shape miniature wash basins, all 5 inches in diameter. These are merely to show the various new colors and combinations in this grade of ware. Among those to which he alludes as strictly new are solid Turquoise Blue, Starry Turquoise Blue and a solid Ivory or Elephant Tusk color. The interiors are all solid white. The remaining varieties will be known in the trade as Garnet and White, Cameo and White, Mosaic and White, Inlaid and White and Blue and White for the outside, the inside being solid white. Those to which reference has been made are said to have four separate coats of thin enamel, fired after each application, the fourth coating being the white interior. The ninth variety is a cameo finish over all alike, inside and out. A full line of American shapes can be furnished, including such staple articles as lipped Sauce Pans, Preserving Kettles, Tea and Coffee Pots, Tea Kettles, Wash Basins, Dish Pans and Water Pails, together with all the various smaller articles that constitute a full line. It is his intention to give the

sale of these goods to but one dealer in a town, to provide against ruinous competition, hoping thus to insure a fair profit to all concerned. Only importation orders will be taken, no stock being carried in New York except the last mentioned finish, viz., Cameo inside and out. To those interested a set of the nine samples will be sent from which to make up importation orders, which may be of one kind or some of each variety.

A Unique Window Display.

Barrett Hardware Company of Joliet, Ill., have shown much ingenuity in arranging the horse and sleigh here illustrated, as a display for their large double show window. The floor of the window is covered with material to represent snow, producing the effect of a winter scene. The body of the horse is made by building a frame of wood about the shape of a horse, putting barrel hoops around it, and then covering it with various Hardware and

for tugs. The company suggest the use of Hoop Iron in place of Rope for the tugs, as they think it would produce a better effect.

MEMORANDA.

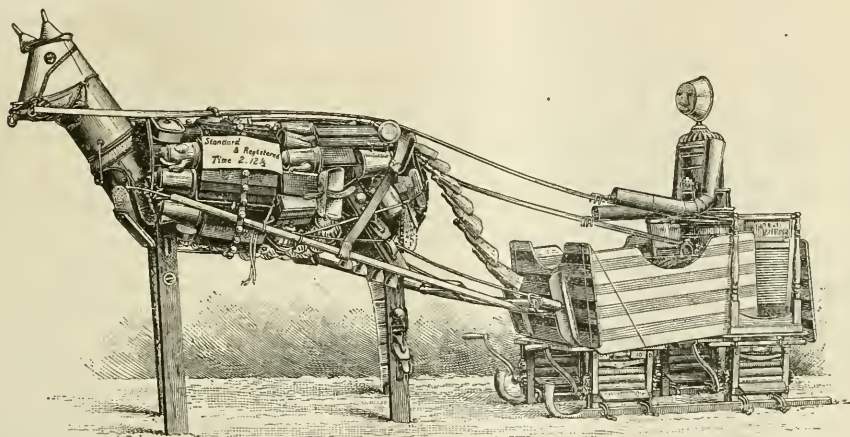
COBB & ARCHER, 96 Centre street, have the New York agency for the Syracuse bicycle made by the Syracuse Cycle Company, Syracuse, N. Y. They have secured Gus. T. Berglund, a well-known trainer, as a salesman and look forward to a good trade. Scorching being one of the pastimes of the cyclist Mr. Cobb's experience in his other business of steam and hot water heating should enable him to give to his customers some points in making even wheels circulate.

THE OCHSNER & ORCUTT COMPANY, 1012 Fourth street, Sioux City, Iowa, have purchased the business and sporting goods stock of C. E. Ellis of that place, and will add this to their line of general hardware. It is their intention

are made with wide tires with carefully fitted bearings. There is a patent adjustable clamp that is said to be a sure and positive grip on a barrel, and can be adjusted to any size of barrel. The finish of the truck is black japan.

EDWARD MILLER & CO., Lamp manufacturers, now have the main entrance to their store at 66 Park place, instead of at 10 and 12 College place, New York, as heretofore. Owing to the widening of College place from Chambers street to Dey street, the buildings on the west side are rapidly being razed to the ground or parts of the fronts being torn down, as the case may be. As only a portion of their present stand has been demolished, as soon as a new front can be built conforming to the changed conditions their entrance will be as before.

The Ohio knock down stove pipe which the Geauga Foundry & Mfg. Company, Painesville, Ohio, are offering is put together by slipping a small metallic cylinder nearly the length of a joint of pipe over the locks, which are



A Unique Window Display.

House Furnishing articles. The head is made of a Funnel Coal Hod, with Oven Door Rosettes for eyes and inverted Funnel for ears. A Pudding Mold forms the lower part of the mouth, and a pair of Scissors and two Hanging Lamp Hooks comprise the Bit. The neck is a Flour Bin, and the body is covered with Tea Pots, Dinner Pails, Sweepers, Crumb Brushes and Pans, Tin Gem Pans and such other articles as will cover the frame. A pair of Potts' Sad Irons were used as terrets for the lines to pass through, the lines being of 1-inch Hoop Iron. For legs Levels and Planes are used, these being lined on the inside with Scrub and White Wash Brushes. The tail is formed of Brush Brooms wired together. The sleigh runners are two Plow Handles, with four Clothes Wingers for standards. An inverted Sewing Table and Lap Boards form the sides, front and back, and Molding Boards are used for the bottom of the sleigh. On the seat an Oil Heater is placed, with a Pan with Tinners' Trimmings soldered to the bottom to represent the face. Conductor Pipe and Elbows form the arms, and Garden Hooks are used for the hands. Two Drain Cleaners are used for thighs and a Shovel forms the cross bar, with Ropes

to also do a jobbing business in relay bicycles and specialties. We understand that they propose making their facilities for gun and bicycle repairing second to none in that section, and will solicit work in that line throughout that territory. The company are agents for the Stewart stoves and ranges as well as for the other goods made by the Fuller-Warren Company.

THE SCOLLAY PLANT SPRINKLER, made by John A. Scollay, 74 Myrtle avenue, Brooklyn, and 89 Centre street, New York, for sprinkling plants and flowers, has been pronounced excellent for sprinkling clothes in laundry work. Illustrated circulars can be secured on application.

THE FIRM of Behner & Norton, 530 Main street, Hartford, Conn., have been dissolved, the business to be continued by F. E. Behner at the old stand.

THE G. L. VAN NAMEE MFG. COMPANY, Gouverneur, N. Y., have brought out the Little Giant Steel Truck, for which they claim a number of special advantages. It is simple in construction, made entirely of metal and is designed with a view to possessing great strength. It is furthermore very light, weighing but 14 pounds. The wheels

turned outward. The manufacturers state that a number of joints of the pipe put together will make a continuous line 46 feet long, if desired, of perfectly firm, smoke tight pipe that will not collapse. The pipe is in $\frac{3}{4}$ -inch sizes from 4 to 7 inches and is shipped in crates of 25 joints.

For some time past the Bakers' Unions of New York and Brooklyn have been striving to obtain remedial State legislation to obviate the unsanitary condition of many of the bake shops in these cities. In his official report to the Legislature, State Factory Inspector Connelly, speaking of this evil, says: "Hundreds of the small bake houses are located in damp cellars, where refuse, vermin and foul odors abound. It is stated that the proprietors and workmen in these places have become, perhaps from association, personally as unclean as the quarters they occupy. Many of the shops are used as sleeping rooms by the employees. Vile sanitary conditions and an all pervading disregard of the rules of health and decency are charged against these places, and there is a demand made that they be put under the supervision of the Factory Inspectors, and that stringent regulations be passed concerning them."

TIN PLATES.

Distribution of Tin Plate Imports.

From the British Board of Trade returns we print a table giving the number of boxes of tin andterne plates shipped to various ports of the United States from the port of Liverpool during the last ten years, from 1885 to 1894. These figures do not, of course, include all the exports of British tin plates to this country, large quantities being shipped from Swansea, Bristol and other English ports. But they are instructive as giving an idea of the proportionate

to the doubt that there is something behind it and that those who put it forward are in no sense cowards, but men wise in their generation and resolved to make the best of a bad case. We have taken some trouble to arrive at a knowledge of the facts. The situation is too complex to be dealt with within the limits of a single article. For the present we can do little more than direct attention to its salient features. We may add here at once, however, that we see no reason to regard the policy advocated as anything but suicidal.

States at present is this. The price of steel tin bar is about the same in the States as it is here. The cost of rolling the bar is greater than it is here; the existing tariff is just sufficient to represent the difference, and place the American manufacturer on the same level as the Welshman. The wages paid to tin plate rollers are high because these men are scarce. But for all the other processes the American manufacturer has learned to dispense by the aid of machinery with high class skilled labor. The following quotation from a letter from an American firm will serve to throw more light on the subject than anything we could write: "It is all nonsense about coal miners, laborers, grocery clerks, &c., being easily trained into the position of rollers, sheeters, doublers, &c. Of course, there is not the union nonsense about it over here that there is in England, but still at the same time it does require skilled labor to roll sheets, as you can spoil more iron, break more rolls, and lose more money in shearings if you have a poor roller than any low wages could make up for. It is no easier to roll iron in America than it is in England. We have found that as far as training is concerned we can train a grocery clerk or a boy to run a tinning pot in a few days as well as any full grown Welshman." Furthermore, letters which lie before us show that so far from the American makers finding it necessary to import Welshmen, they are very desirous to get rid of the few that they have, pronouncing them obstinate and slow. Thus, then, it may be stated that the United States are very nearly in as good a position to make tin plates as Wales, the difference in wages being represented by the tariffs and freights. But it must be very clearly understood that this—from an American point of view—favorable state of affairs is due entirely, or nearly so, to the low price of bars. Quoting from another letter, we have the following: "All calculations regarding the ability of the Americans to make tin plates have been overturned by the heavy drop in the prices of billets and bars." And again, "The whole situation is narrowed down to whether the protection given under the new tariff bill of \$1.20 on tin plate and \$1.22½ on black plate, is or is not enough to protect the Americans in rolling the billet down to the sheet, because that is the only part of the operation that needs protection."

No doubt Wales will have to take account with American competition. The monopoly in tin plate will go the road that England's monopoly in steam engines and cotton went, many years ago. But it is folly to assume that because the monopoly is gone the trade must go too. It is admitted on all hands that the price of iron in the United States is abnormally low. A moderate rise would tell heavily against the American plate mills. But, again, the wages in the States are very heavy, so far as skilled labor is concerned, as we have shown. The Welsh tin plate workers have had to submit to a reduction of 12½ per cent. This may seem a great deal. It is well that what it means should be properly

Exports of Tin Plates from Liverpool to United States Ports.

Year.	Philadelphia.	New York.	Boston.	Baltimore.	San Francisco.	New Orleans.	Portland, Me.	Portland, Ore.	Astoria.	Other ports.	Totals from Liverpool.	Total shipped to U.S. from all English ports.
1885.....	489,725	648,177	171,217	129,397	123,388	17,118	96,558	4,735	38,070	9,078	1,727,463	4,477,380
1886.....	310,035	424,039	228,708	104,376	197,404	40,394	59,728	25,909	57,259	14,940	1,462,850	5,271,709
1887.....	340,395	578,854	303,876	307,013	197,633	31,446	65,575	21,642	25,474	87,539	2,101,690	5,367,390
1888.....	446,546	735,199	241,022	213,681	308,345	38,860	51,588	6,750	10,748	36,025	2,085,122	5,852,460
1889.....	547,854	1,517,820	256,835	206,317	408,910	65,071	40,708	42,818	27,972	41,817	3,297,122	6,733,840
1890.....	392,744	747,594	257,016	347,368	164,744	21,648	65,312	29,087	17,450	31,303	2,074,270	6,362,150
1891.....	271,304	1,358,302	261,872	319,456	287,182	67,679	85,632	8,863	38,686	37,412	2,785,098	6,304,900
1892.....	78,440	436,430	305,664	253,441	282,736	22,584	79,161	18,459	41,480	48,341	1,521,686	5,569,580
1893.....	78,719	826,305	161,206	67,309	369,390	14,600	33,714	6,845	32,565	57,306	1,137,929	5,111,660
1894.....	130,086	254,088	176,150	150,970	186,371	2,517	5,096	14,272	47,713	57,109	1,019,407	4,637,580

distribution of imported plates in the various sections of this country, the plates being generally consigned to the port nearest to the place of consumption. The last column gives the total number of boxes of tin plates shipped to the United States in the same years.

Tin Plate in Wales and the United States.

Under the above heading the London *Engineer*, one of the most eminent and reliable technical authorities in England, publishes, in its issue of February 1, the following interesting editorial in regard to the present situation in the Welsh and American tin plate industries:

A noteworthy example is now being advocated in Wales. Nothing less, in short, than a short life and a merry one for the tin plate trade. Certain manufacturers, and very many of the men, have arrived at the conclusion that the United States are going to make in the near future for themselves all the tin plate they need; that is to say, 75 per cent. of the total output of the 531 mills in the principality. That as a result the Welsh tin plate trade will become extinct, and that under the circumstances the best course to pursue is to raise the price of tin plate 5 or 6 shillings a box, to make in this way a great profit and carry away a legacy left by the dying industry. The idea involved appears to be absurd. It could only, we imagine, originate in the minds of Welshmen. Englishmen would scarcely give up the struggle in a fashion which it is not easy to regard without contempt. Yet the surprising character of the proposition startles us

Previous to the year 1665 England was exclusively supplied with German tin plates imported from Hamburg. In 1691 a patent was granted in this country for the manufacture of tin plate, and for about 200 years Wales has had a monopoly of the trade, which has grown from a make of 1,000,437 boxes in 1862 to 8,967,580 boxes in 1891. Fostered by the tariff and other causes, the United States began to make tin plates several years ago. Their earlier efforts in this direction failed; but Americans, unlike Welshmen, do not easily accept defeat. In the fiscal year 1892 there were made in the United States 13,646,719 pounds of tin plate; in 1893 the output rose to 99,819,202 pounds, and last year it reached 141,386,608 pounds, or 63,118 tons. It was believed that the abrogation of the McKinley tariff would shut up the United States mills; instead it brought about a demand for a reduction in wages. The American rollers had been earning on an average from \$8 to \$12, or 33 shillings and 6 pence to 48 shillings and 9 pence per day. The masters proposed \$6 or 25 shillings per day. There was a strike, which has closed the American mills for the last three months. The accounts which have reached this country as to the magnitude and importance of this strike are conflicting. In the end the masters appear to have been victorious so far that a couple of weeks since a compromise was effected at a reduction of 15 per cent. Instead of the 30 per cent. asked for, and we now hear that fears are being expressed that the output of American mills will be so great that the market will be glutted. Energetic as we know that our rivals across the water are, we venture to think that the fear is the outcome of hope rather than certainty. The situation in the

understood. In ordinary times the roller men earn about £3 per week, or nearly twice as much as a fitter. The work is not exceptionally heavy; nothing like so severe as that of a puddler, for example. In 1874 the high water mark of wages was reached. The trade was never so prosperous. It will scarcely be credited that until last year no change was made, or attempted to be made, in the scale. But, besides this, the unions restrict the make to 36 boxes per mill per shift of eight hours. The result is, that all the standing charges per box are much increased. In the United States the out turn is 50 to 55 boxes in eight hours.

Obviously, it appears to us, the proper position for masters and men in Wales to pursue consists in combining together to defeat the American maker. One of the first things to be done is to steady the market and give the dealers and brokers some chance of doing trade on a sound basis. There is a very well grounded complaint that an exporter now is never sure that the price he pays is the lowest at which he could have bought. "The higgling of the market" is a recognized factor in political economy, but it can be carried to such an extent as to check trade. In the next place, the whole position should be reconsidered—not on a small scale or in a narrow minded way, but very broadly; and a definite figure should be arrived at as representing the price at which plates can be made, leaving a fair but not excessive profit, and that price should be such as to kill American competition if possible, even if it did not represent any profit at all. The representatives of the men should meet the masters, and by discussion arrive at a definite conclusion. The question for consideration is terribly simple. Is the manufacture of tin plate in Wales to be abandoned or continued? To answer this it is essential that the true nature of the United States competition should be known by master and men alike. If it is determined that it is to be abandoned by the existing owners, we may rest assured that others, younger and more enterprising, will take it up and continue it—probably on a smaller scale and under different conditions as to wages and machinery; or a great union of the more powerful mills may be formed to beat the American manufacturer. If, on the contrary, it is resolved that the American shall be fought on the existing lines, then it is for masters and men to combine with that object. As for the union, there appears to be but one course open—it must submit to a reduction in wages and a removal of restrictions which, barely tolerable under a monopoly, are out of the question in a trade fighting for existence. The only certainty at present is that the manufacture of tin plates in the United States is in a fair way to become a great industry, and nothing short of a considerable rise in the price of iron appears to be likely to check it.

The Tin Plate Crisis in Wales.

According to the latest news from England matters in the tin plate trade in South Wales seem to have reached a grave crisis. One-half the works are wholly idle and the rest are only working fitfully. Intense distress naturally exists among the workmen and their families in the tin plate districts owing to the prolonged idleness of so many of the works. The severity of the weather of late has added acutely to their sufferings. Private intelligence received

from that quarter describes the hardships endured by the poorer families in the South Wales tin plate districts as being almost unheard of in prosperous Wales. They are in many cases absolutely without the necessities of life and are starving of hunger and cold. This condition of things involves several thousand men, women and children. As to the outlook no one cares to express any opinion.

Yet, notwithstanding all this, the men's delegates seem determined to prefer complete idleness to the 20 per cent. reduction in their old wages demanded by the manufacturers. Many of the latter express themselves as being willing to resume if this concession and the abolition of the 36 box rule are granted, even if they are only able to make their expenses. Failing this, they explain that they cannot afford to go on making tin plates at a loss and their only alternative is to shut down, which in most instances they have proceeded to do. Nor can they be blamed for their action. With a dwindling trade and prices declining week by week, until the figures touched last week are said, on good authority, to leave the makers with a loss of 15 per cent., it is an utter impossibility for the manufacturers to keep their works running at the old scale of expense. The situation seems to justify the English journals in describing it as the worst ever experienced in the entire history of the tin plate trade.

SCRAP.

J. S. TREGONING, proprietor of the well known Morfa Tin Plate Works, Llanelly, South Wales, appears to take a very disheartened view of the prospects for the Welsh tin plate industry. In a recent speech, delivered to his workmen, Mr. Tregoning is reported to have said, speaking of the future of the works, that what they proposed doing was to take stock very carefully and see what had been the result of the trading operations of the past six months. Upon that they would decide whether to continue or close the works. But in the mean time everybody would be paid off. As it was at present they could not carry on the business. It was a mistake on the part of the men to set their faces against improvements, and he believed that unless washmen were disestablished there was a very serious outlook before them. He had an opportunity the other day of selling the Morfa Works to a company, but he did not consider it honest so long as he could not see his way through the difficulty to throw that difficulty upon a company. Even if they had a reduction of 50 per cent. they could not make the works pay.

THE ERECTION of the National Tin Plate Works plant, Anderson, Ind., is being pushed. The main building, 400 feet long, is up, and the engine room is also erected. The works are expected to be in operation by May 1.

THE PROJECTED large tin plate plant to be erected at Washington, Pa., to which references were made in these columns some months ago, appears to be still in abeyance. Plans have been drawn out and the location decided on, but no active steps have as yet been taken toward the erection of the buildings. We understand, however, that the scheme has not been abandoned.

THE WELSH TIN PLATE TRADE, according to a well-known Llanelly manufacturer, quoted in the *Western Mail*

of Cardiff, has never been in such a depressed state as at the present time. The Llanelly tin plate makers are only working off present orders, after which they will close their works and wait for an improvement.

HAMILTON, OHIO, will, it is said, soon have a large tin plate works. A company for the purpose is reported to have been organized, and the necessary buildings are to be erected shortly.

THE LOCATION of a new tin plate works at Frankton, Ind., by Cincinnati and Chicago capitalists, is reported to have been decided on. Work on the buildings will be commenced as soon as the weather permits. According to the terms by which a bonus is granted to the company, the plant must be in operation by July 1, working with not less than 350 hands.

FOLLANSBEE BROTHERS' COMPANY, Pittsburgh, Pa., manufacturers of Scott's Extra Coated roofing plates, who have succeeded to the business of James B. Scott & Co., are sole factors for the Blairsville Rolling Mill Company, Blairsville, Pa., manufacturers of tin andterne plate and black sheets. Messrs. Follansbee were for many years the active members of the firm of James B. Scott & Co., and their many friends in the trade will be pleased to know that the new house is meeting with excellent success and their business promises to greatly exceed that of the old firm.

AT THE CLOSE of this week almost all the tin plate works in the United States are in operation.

THE MORTON TIN PLATE COMPANY, Cambridge, Ohio, have placed an order for two five-roll Morewood tinning sets with the Lloyd Booth Company, Youngstown, Ohio.

IT IS STATED upon good authority that the addition to be made to the New Castle, Pa., Steel & Tin Plate Mill will be at least eight mills and perhaps ten, and that when completed the mill will be one of the largest and best equipped tin plate works in the world. A complete system of electrical cranes will be put in.

THE LIMITED PARTNERSHIP heretofore known as Wallace, Banfield & Co., Limited, Pittsburgh, Pa., operating the Ironside Rolling Mills, Ironside, Ohio, and manufacturers of tin andterne plate, has been dissolved, John C. Wallace, Wm. Banfield and W. E. Foale being appointed liquidating trustees. The business heretofore conducted by said partnership will in future be conducted by the above named parties, under the firm name of Wallace, Banfield & Co.

THE AMALGAMATED ASSOCIATION compromise scale has been accepted by the Ellwood Tin Plate Company, Ellwood City, Pa., and the plant of that concern is in full operation. At the present time there are but three concerns in the country manufacturing tin andterne plate that are not running under the above scale. These are: Wallace, Banfield & Co., Ironside, Ohio; U. S. Iron & Tin Plate Mfg. Company, Dammier, Pa.; and St. Louis Stamping Company, St. Louis, Mo. The plants of these three concerns are in operation on the scale originally presented by the manufacturers, which called for a reduction of 30 per cent. in wages of rollers and 25 per cent. for heating and doubling.

AN EXPERIMENTAL RUN was made last week at the new tin plate plant of the Monongahela Tin Plate Company,

at Pittsburgh. This plant is located on the site of the old plate mill of the Oliver Iron and Steel Company, and contains nine hot and cold mills. For the present the concern will roll only black plates, while the tinning will be done by the Duquesne Tin Plate Company of Pittsburgh.

THE BLAIRSVILLE ROLLING MILL & TIN PLATE COMPANY, manufacturers of tin andterne plate and black sheets, have made an arrangement with their employees by which Amalgamated Association scale prices will be paid, but the scale will not be signed. The plant of the above concern is in full operation.

WILLIAM H. GRIFFITHS, Pittsburgh, Pa., has secured a patent on a process of manufacturing tin plates, which consists in dipping the plate in a bath of molten metal through a layer of sand mixed with oil, and a chemical flux consisting of sal ammoniac and nitrate of zinc. Also in dipping them a second time through a layer of sand mixed with oil or tallow floating on the metal.

THE SUMMARY STATEMENT of imports and exports for the month of December, 1894, prepared by the Bureau of Statistics of the Treasury Department, shows that only 28,313,364 pounds of imported tin andterne plates were lying in the bonded warehouses of the United States on the last day of the year, as compared with 46,725,926 pounds similarly held on December 31, 1893.

THE BRITISH BOARD OF TRADE RETURNS for January show a great falling off in exports of tin andterne plates from British ports during that month, as compared with the previous month. They were 29,000 tons, against 38,000 tons in December, and 31,000 tons in January, 1894. Exports to the United States in January, 1895, were 18,000 tons, as compared with 24,000 tons in December.

Prevention of Smoke in Cities.

The citizens of Chicago have on sundry occasions supposed that the problem of preventing smoke had been solved for them. But they have just as frequently been disappointed. Yet they have not abandoned all hope of correcting this vexatious accompaniment of the general use of bituminous coal. Probably no other city is so persistently keeping up the fight. The city ordinance imposing a fine for smoky chimneys becomes a dead letter after one set of officials has tried to enforce it and failed, but when a new set comes into power the issue is revived and the fight is hotly renewed. The administration now in power has been more persistent than its predecessors. Violators of the ordinance have been prosecuted with greater vigor than before, and those who have been obliged to pay heavy fines have turned to the use of anthracite coal to avoid further trouble. The soft coal interests of the city and State are important and were supposed to be all-powerful, but they have been wholly unsuccessful in attempting to induce or compel the present city authorities to cease their warfare on smoky chimneys. The result is that new lines are now being laid down for the future prosecution of this work.

The new departure consists in the co-operation of the soft coal interests with the city officials. Heretofore they have been wholly antagonistic, the soft coal miners and dealers looking upon the efforts to cure the excessive produc-

tion of smoke as a crusade against soft coal and a movement in support of the business of their competitors, the anthracite coal dealers. They insisted that smoke preventing devices were a failure, and that, even if soft coal was burned in a way to emit the largest possible volume of smoke, the smoke rolling from a chimney was an evidence of activity and prosperity, and should not be branded a nuisance, especially if the smoke producing coal came from Illinois mines. But the inflexible stand taken by the city administration compelled them to change their tactics, and, at a conference recently held by the soft coal dealers and miners with the authorities, it was found that common ground could be struck on which both could work. The soft coal representatives now acknowledge that a steam plant can be so constructed that it will consume soft coal without the emission of dense smoke. They admit that a very great deal of the smoke nuisance in Chicago is caused by the faulty boiler settings. Therefore they agree that, in order to prevent a reduction in the consumption of soft coal through the enforcement of the smoke ordinance, an intelligent supervision must be established over the installation of new power plants, and the faulty plants in existence must be altered and improved.

The outcome of the conference is to be a new ordinance which will consolidate the several independent bureaus created at various times for boiler inspection, smoke inspection, elevator inspection and the licensing of stationary engineers. It is proposed under this ordinance to permit no one to install a steam plant unless all the regulations of the new department are complied with, and these regulations will provide for a properly constructed plant with sufficient draft and other details necessary for the perfect combustion of coal. Permits for repairs to old boilers will be refused unless the plans are approved by the department. The consolidation of all these bureaus into one department is such a common sense proposition that it is remarkable that it was not done long since. Under an arrangement of this character the responsibility for a chimney befouling the entire vicinity is a comparatively easy matter. If it is the fault of imperfect boiler setting the fact is authoritatively established and the owner is the party to be fined for violating the smoke ordinance. If, however, the plant is properly built, and the engineer or his fireman is careless or inefficient, that fact is established and the engineer's license is revoked, for he is held responsible for his fireman. The soft coal interests will not be discriminated against under such an ordinance, but on the contrary a systematic regulation of steam plants will be introduced which will be of benefit to them by demonstrating the possibility of smokeless or almost smokeless firing with soft coal. At present they are rearing under a stigma in every city, which has been brought upon them by the unscientific or unintelligent use of soft coal or by the forcing of power plants beyond their legitimate capacity.

The annual report of the State Mine Examiner of Alabama shows that last year 4,246,736 tons of coal were mined in the State and 9280 people employed, as against 5,270,042 tons and 10,280 people for 1893. The falling off was caused by the coal strike of the summer.

For the first time in 30 years the Delaware River was, on Sunday, solidly

frozen over between Philadelphia and Camden, N. J., and people crossed on the ice from shore to shore.

Trade Notes.

THE WEST SIDE FOUNDRY COMPANY of Troy, N. Y., have issued an illustrated catalogue of stable fittings, &c., which is likely to prove interesting to many of our readers. Among the goods illustrated are Stall Guards of cast iron, crimped wire, wrought iron and square mesh crimped flat iron, Stall Panels of cast iron; also Ventilators and Door Panels, Hinges, Hay Racks, Salt Dishes, Hog Troughs, Hitching Posts, Blanket Brackets, Harness Hooks, Pole Brackets, Stable Gutters and Covers for wood or cement floors, Caldrons, Cuspidors, &c.

THE ANNUAL MEETING of the stockholders of the Novelty Stamping Company, Bellaire, Ohio, was held recently and the result of the year's business was reported as being very satisfactory, although no dividend was declared. The capacity of this concern for the manufacture of railroad and tubular lanterns, stamped ware and sheet metal specialties has recently been doubled, the firm having added to their equipment a No. 14 Bliss press at a cost of \$5000. At the present time the firm have sufficient orders on hand to guarantee steady operations for the next six months.

THE NEW ADDITION to the McCullough Iron Company's works at Northeast, Md., is nearing completion. It will replace the building burned some time ago.

THE ANSONIA BRASS AND COPPER COMPANY, Ansonia, Conn., have leased the factory formerly occupied by the Aluminum Brass and Bronze Company, Bridgeport, Conn.

A BIG WAREHOUSE FIRE in Louisville, Ky., on Sunday, February 10, involved severe losses to the Louisville Tin & Stove Company, 122 to 128 Eighth street, and Myer, Bridges & Co., hollow ware and wooden ware, 815 West Main street. The losses are said to be entirely covered by insurance.

IN THEIR ADVERTISING SPACE this week Gummy, Sperring & Co., Philadelphia, print a testimonial letter received from Fieber & Holmes, Brookville, Ind., in which they give their experience with Gummy's Anti Pinhole Tin, which they have used for coffee pots and boilers, and have given it remarkable tests with most excellent results. Messrs. Gummy, Sperring & Co. have taken much trouble to bring out this plate and are much gratified with the excellent properties it has shown in use.

THE FIRM of Evans & Robertson, Cincinnati, Ohio, have been succeeded by the W. F. Robertson Steel & Iron Company, whose office is in the Chamber of Commerce Building, W. F. Robertson having purchased the entire interest of Charles Evans in the old concern.

G. A. CROSBY & Co., 176 and 178 South Clinton street, Chicago, are now carrying in stock a full line of Tinners' Tools, comprising Crimpers and Beaders, Seaming and Grooving Machines, Pipe Formers, Wiring Machines, Turners, Burring Machines, Forming Rolls, Bar Folders, Tinners' Stakes, &c., and Tinners' Small Tools.

STOVE TRADE NOTES.

The Chicago Stove Trade.

Nobody expects to do a very large volume of business at this time of the year. It is midwinter, and although it has been unusually cold throughout the Northwest for the past month, the trade in heaters has not been stimulated. The usual scattering orders have been received, but the wants of the country had been well supplied when winter set in. Protracted cold spells of excessive frigidity may make people buy more coal, but not additional stoves. The dependence of the trade is now on the various forms of cooking apparatus. Cook stoves and ranges are a constant necessity without regard to season. The demand for these has been fair, but manufacturers report a varied experience. Some have done but little—so little that they take a gloomy view of the situation. Their sales are below those of the corresponding period of last year, and they see no basis on which to rest hopes for the future. To them the outlook is bad, and will continue so until farmers get better prices for their produce. But others are much more cheerful. Either their goods are more popular, or they have more energetic salesmen, or they depend less on purely agricultural communities. A refreshing experience is noted in the case of a few houses who have actually received carload orders. These orders may not all have called for very large carloads, but they have been big enough to class in that category.

The various stove foundries in the Northwest are quite generally in operation. But so far as known at this writing, very few, if any, are running full time. Some are on half time and others vary from that up to five days per week. This is due to the stocks carried over from last season. Manufacturers made more stoves in 1894 than they were warranted in doing by the actual condition of trade. But they were anxious to keep their working force organized, or else they were prompted by pure philanthropy to accumulate even excessive stocks in giving their workmen employment so that the latter could provide food for their families. These stocks now prevent the resumption of work on full time, for obvious reasons. If the demand were large enough to move the current output of the foundries the case would be different. It is to be hoped that as the year advances the prospects of trade will brighten, so that fairly full employment may again gladden the hearts of all interested.

It might be supposed that such times as we have endured for the past two years would check enterprise and cause manufacturers to confine their attention to the devising of plans for moving more stoves of the kind they are already making. This, however, is not the case. Designers and pattern makers have not found their occupation gone, but they are still connected with the stove trade and have a goodly clientele. New stoves may not be so numerous this year as they have been in more prosperous times, but nevertheless quite a number of stove companies will bring out notable additions to their lines. Considerable enterprise is shown in the direction of steel ranges. Manufacturers of cast goods are giving increased attention to steel construction, as they perceive a growing fancy for ranges of that character among their customers. It is a curious feature of current trade that notwithstanding the hard times the demand for steel ranges is increasing steadily, although they are as dear, if not dearer, than the best class of cast ranges. It appears to be the ambition of housewives to own a steel range when one of their neighbors thus furnishes her kitchen.

The St. Louis Stove Trade.

In view of the extreme cold weather prevailing throughout the section tributary to St. Louis the natural supposition is that the stove foundries would be running full turn to fill the demand. Such, however, is not the case. Inquiry reveals the fact that retailers have bought very sparingly during the past 60 days and have endeavored to clean up stocks which they carried over from the last two seasons. The cold weather has caused stoves everywhere to be forced to their full capacity, so that next fall will find many of them unfit for use, and the outlook for a good trade at that time is decidedly encouraging. Notwithstanding the dullness, manufacturers are not idle but are busy on their lines for this year's trade. Visits to the pattern shops of the local foundries find them working larger forces than for some time past. In fact one concern was compelled to advertise for additional pattern makers. This indicates that the local stove men will be in the market with goods that are "up to date" in every particular. Steel ranges will be pushed with much vigor during the coming season and three of the four St. Louis foundries will have exceptionally full and complete lines of ranges to offer to the trade.

The sale of furnaces has been satisfactory and the test to which they have been put by the extreme weather has been a severe one. The wood burning air tight heaters have sold in large quantities and it is estimated that between 15,000 and 16,000 were made in St. Louis during the past season.

The gasoline stove trade opens with excellent prospects. The local manufacturers have made extra improvements in their goods, which will, it is hoped, be followed by an increased sale during the coming summer months.

Amos C. Barstow.

The annual meeting of the Barstow Stove Company was held at the company's office in Providence, R. I., on Saturday, February 9, at which the secretary presented a paper to the stockholders of which the following is a copy:

At the regular meeting of the New England Stove Manufacturers' Association, held at Boston October 18, 1894, the following resolution was unanimously adopted:

Resolved, That this association, through proper resolutions, express its sense of loss in the death of Hon. Amos C. Barstow, and that a committee of three be appointed to draft such resolutions, to be forwarded to the family and business associates of the late Mr. Barstow, and that a copy of the same be entered on the records of the association.

George W. Walker, Albert N. Parlin and J. R. Prescott were appointed a committee, and herewith hand you a copy of the resolutions prepared and reported by them.

Whereas, Death has removed one of our valued associates since our last meeting;

Resolved, That in the death of the Hon. Amos C. Barstow we recognize a sense of loss in which the whole community where he was known must share. Although he was not actively connected with our association, he was known to us by a reputation which made him one of the most prominent men ever identified with our trade.

His abilities and virtues enabled him to command in an unusual degree the confidence of others, and the stove trade feels itself honored in the long list of public and private offices and positions of trust held by him.

We bear testimony to his honorable career as a merchant and to those graces of manner and character which endeared him to so many as a friend.

To his associates in business and to his family we extend our sympathy and place upon the records of the New England Stove Manufacturers' Association this tribute of respect and esteem.

GEO. W. WALKER, }
A. N. PARLIN, } Committee.
J. R. PRESCOTT, }

Cupola Tuyeres.*—V.

BY DR. EDWARD KIRK.

Height of Tuyeres.

There is a wide difference of opinion among foundrymen as to the height or distance tuyeres should be placed in a cupola above the sand bottom. So great is this difference of opinion at the present time that tuyeres are placed in cupolas at from 2 inches to 5 feet above the sand bottom. This wide variation in the height of tuyeres is due to some extent to the different classes of work done in different foundries, it being claimed by foundrymen making heavy work that it is necessary to have the tuyeres high to hold molten iron in the cupola and keep it hot for a large casting. Foundrymen making light castings requiring very hot iron draw the iron as fast as melted, and do not think it necessary to have high tuyeres to hold iron in the cupola. In the many experiments I have made in melting iron in a cupola I have placed the tuyeres at various distances above the sand bottom, and closely observed the effect of tuyeres at different heights. I learned by these experiments that the fuel under the tuyeres is not consumed in melting, nor is it wasted away to any extent by the heat or molten iron coming in contact with it. Charcoal may be placed in the bottom of a cupola, and if care is taken to prevent it being consumed by admission of air through the front before the blast is put on the charcoal will not be consumed during the heat and may be found in the dump. I have tried this in my experiments to soften hard iron by bringing the molten metal in contact with charcoal in the bottom of a cupola and found it correct. Pieces of charred wood used in lighting up are often found in the dump after having remained in the cupola through a heat. If these soft combustible substances are not consumed under the tuyeres, then it is not at all likely that the less combustible hard coal and coke are consumed. No iron can be melted in a cupola under the tuyeres, and the only function of the fuel below the tuyeres is to support the stock in a cupola above the tuyeres. If there is not sufficient heat in the bottom of a cupola to consume wood or charcoal, then there is not sufficient heat to keep molten iron hot for any length of time; and it is a well-known fact among practical foundrymen that large bodies of molten iron can be kept hot and fluid for a greater length of time in a ladle when covered with charcoal to exclude the air than it can be in a cupola.

Another reason given in favor of high tuyeres is that it is necessary to have them high to tap slag in long heats. The only slag in a cupola that can be drawn from it through a slag hole is a light fluid slag that floats on top of the molten iron or rests on the bottom of the cupola when there is no molten iron in it, and this slag may be drawn at any point between the sand bottom and tuyeres. When a slag hole is placed high, slag can only be drawn when the cupola is permitted to fill up with molten iron and raise the slag upon its surface to the slag hole. Slag may then be drawn for a few minutes while the cupola is filling up with iron to the slag hole. As soon as the iron reaches the slag hole, however, it flows out and must be tapped from the front. The slag then falls in the cupola with the surface of the iron as it is drawn off and the slag hole must be closed to

prevent the escape of blast through it. Iron tapped after permitting a cupola to fill up to a high slag hole is always dull.

When a slag hole is placed low it is not necessary to have the cupola fill up with iron before slag can be tapped, for the slag may be drawn off the bottom of the cupola, and, furthermore, the slag hole may be opened and permitted to remain open through a heat without waste of blast. The flow of slag regulates itself when the hole is of a proper size. It is, therefore, not necessary to place tuyeres high that slag may be drawn from a cupola, nor is it necessary to hold iron in a cupola for a large casting or to keep it hot. Molten iron should be handled in a ladle and not in a cupola.

Hot iron for light work cannot be made in cupolas with high tuyeres, and for this reason the tuyeres in stove foundry cupolas are always placed low. In cupolas of large diameter, having a large bottom surface for molten iron, the tuyeres are placed so low that those at the back of the cupola are not more than 1 inch above the sand bottom, and those in front not more than 2 or 2½ inches above the sand bottom. Tuyeres placed in this way give ample space below them to hold molten iron for this kind of work, for the iron must be very hot and is drawn from the cupola as fast as melted, and the cupola is large enough to melt iron as fast as it can be handled, and it is only when the cupola is not working free that it is stopped up to accumulate iron. The tuyeres in any cupola may be placed as low as in these large ones, if provision is made for handling the iron as fast as melted.

In smaller cupolas not capable of melting iron sufficiently fast to fill a 40 pound hand ladle every 8 or 10 seconds the tuyeres are placed from 2 to 4 inches above the sand bottom, so that a sufficient quantity of iron may be collected before tapping to give each man in the section catching a hand ladle full and fill the ladle in about 6 seconds.

In cupolas of very small diameter the tuyeres should be placed from 6 to 10 inches above the sand bottom. These very small cupolas melt so slow that if the iron is drawn as fast as melted the stream is so small that the iron is chilled in flowing from the cupola to the ladle more than it is by holding it in the cupola until a body of iron is collected sufficient to supply a large stream.

In machine and jobbing foundry cupolas tuyeres are generally placed from 18 to 24 inches above the sand bottom. The object in placing the tuyeres so high is to hold iron in the cupola for a large casting. But, as before explained, this is not necessary or advisable. Another reason for these high tuyeres is that they are necessary for tapping slag. The slag from many cupolas is drawn off at the top hole with the iron, and a number of spouts have been invented for separating the slag from the iron and preventing it running into the ladle. Slag may be drawn from the back of a cupola on a level with the sand bottom at that point, if the iron is drawn as fast as melted, or it may be drawn 1, 2 or more inches above the sand bottom at that point. It is, therefore, not necessary to place tuyeres at so great a height to tap slag.

The tuyeres in cupolas for heavy work should be placed from 6 to 8 inches above the sand bottom when slag is not to be tapped. This gives an abundance of room in a cupola for holding iron while removing or placing a large ladle, and

that is all that is necessary. The tuyeres in many of the cupolas used in Bessemer steel works are placed 5 feet above the bottom. They are probably placed at so great a height because the tuyeres in the first cupola constructed for this work were placed at that height. Tuyeres in all cupolas should be placed as low as they can be for the size of the cupola and facilities for handling the iron, for the fuel placed in a cupola under the tuyeres is not consumed in melting and is wasted by being heated in the cupola and crushed and burned in the dump. The value of fuel wasted every year in the United States by the use of high tuyeres in cupolas is sufficient to make a man rich.

ODD PLATES.

THE WORKS of the Ohio Stove Company of Portsmouth, Ohio, have begun operations again after a shut down of several weeks. The plant has been enlarged and improved and work is resumed with a full force.

THE WEST SIDE FOUNDRY COMPANY of Troy, N. Y., favor us with illustrated circulars of some of the specialties which they are offering the trade. Among these may be mentioned the Paris Ideal six-hole range with smokeless attachment; the Masterpiece, a square base burner which has recently been placed upon the market; the Improved Paris Imperial, a new surface burner, made in three sizes; the Paris double draft, a six-hole range of attractive design; the Paris Marvel, a four-hole range for hard coal or wood; the Paris Home Comfort, a six-hole range of the latest pattern, and the Paris cottage parlor and range combined. The company have in process of preparation a new stove catalogue which they expect to distribute to the trade in the course of a few days.

THE EVANSVILLE STOVE WORKS, Evansville, Ind., have recently enlarged their warehouse. They started up their works on the 13th ult., running with a full force.

RATHBONE, SARD & Co. of Albany, N. Y., are distributing to their friends an interesting puzzle, the solution of which will help to occupy many an hour in these dull times. The puzzle consists of a paper dumb bell about 8 inches in length, the ends carrying representations of acorns and the inscription "Acorn stoves and ranges." Between the ends and upon the bar portion are three rings so placed that at first glance the puzzle seems impossible of solution. The idea is to take off and replace the rings without bending the bar. Like everything else it is very easy when one knows how, but the "know how" is what is difficult to acquire.

NEW YORK STOVE MEN are reaping honors and Walter A. Clark of the Phillips & Clark Stove Company, formerly of Troy, N. Y., and now of Geneva, is getting a large share of them. Assemblyman Clark is now to be complimented upon his selection as treasurer of Hobart College.

EDMUND T. RAFTERY, manager of the Chicago branch of Rathbone, Sard & Co., Albany, N. Y., is making his annual visit to friends in the East.

THE HOBRECKER STOVE COMPANY of Omaha, Neb., have issued a very neat catalogue of gasoline stoves, ovens and furniture which they are offering the trade for the season of 1895. The stoves are placed on the market under

the name of the Insurance line. They comprise all styles of individual and single generator stoves, high juniors, low juniors, &c. The catalogue is a highly original production, abounding in poetry, quaint sayings and curious letters from queer customers. It is undoubtedly of a character to attract attention.

A HUGE LINEN BACKED CARD reaches us from the Michigan Stove Company, on which is printed a capital appeal to the reader. It very appropriately begins, "This cloth is not all wool and a yard wide," and then refers to the merits of Garland stoves and ranges. The Michigan Stove Company display much originality in these advertising devices. Manager Gardner comprehends both the art of catching the attention of a reader and then saying something likely to fasten itself on his memory.

THE PORTSMOUTH STOVE & RANGE COMPANY, Portsmouth, Ohio, despite the discouraging past and the uncertain outlook, have been doing a very satisfactory business. The company have at present more orders on their books than ever in the history of their business.

THE JOSEPH BELL STOVE & RANGE COMPANY of Muncie, Ind., are being represented this year on the road by J. S. Bush, who is traveling in West Virginia, Kentucky and southern Ohio; C. M. Silkey in Illinois and eastern Missouri; T. J. Schultz in Indiana and northern Ohio, and G. W. Hasty in western Missouri and eastern Kansas.

THE CRAIG-REYNOLDS FOUNDRY COMPANY of Dayton, Ohio, have issued a circular letter to the furnace trade, intimating that now is the time to consider the handling of the Triumph, which they manufacture in several varieties. The company also manufacture hot water, steam and combination heaters, but the Triumph warm air furnace is their specialty. Accompanying the letter are a number of leaflets carrying illustrations of the company's lines. Among these we notice the Triumph All Cast heater, the Triumph Air Blast, the Triumph King, the Triumph Special and the Triumph steel furnace. These are shown with the outer casing removed, so as to enable the dealer to obtain a better idea of the internal construction than would otherwise be the case.

BISSELL & Co. of Pittsburgh, Pa., are to supply the grates for the Woman's Building at the Cotton States and International Exposition to be held at Atlanta, Ga., from September 18 to December 31 of the present year. The company have agreed to furnish 13 of their Peerless and Columbian grates of various styles, finished in electroplated brass, bronze and silver.

THE WEST SIDE FOUNDRY COMPANY of Troy, N. Y., are building up a very gratifying trade in their specialties, and we understand they are seriously contemplating an addition to the north end of their molding shop, extending it 100 feet to 27th street. This will make the addition about 100 x 80 feet in size and give 8000 square feet of space. The 13-story building on Third avenue, in which is located the office, is to be raised to the height of three stories, the upper two floors to be used for storage purposes. A bridge will be erected connecting this addition with the mounting shop. In addition to the manufacture

of stoves and ranges, the company make a number of specialties for other concerns, and these orders are increasing to such an extent that all of their space is now occupied. William Slescher, Jr., is general manager of the company; John A. Slescher is secretary and treasurer; Edwin A. Keating, for many years with Rathbone, Sard & Co., is the general sales agent, and W. N. Slescher superintendent.

WE ARE INDEBTED to the Joseph Bell Stove & Range Company of Muncie, Ind., for a photograph of the New Belmont Arlington line of soft coal and wood cook stoves and ranges for 1895. The cooks are made in 14 sizes and there are four sizes of a six hole range, both square and reservoir, also with new style tea shelves and high closets. The goods are attractively finished, having nickel plated front door and oven door panels, outside oven shelf, tea pot shelf, oven door handles and damper handles. The mounting is of a high order and the castings are of fine grade. A new style of wood cook under the name of La Belle Arlington has also been brought out, the ornamentation and general appearance of which are similar to the Belmont Arlington. Fourteen sizes are made as well as the usual modifications. The company state that their traveling salesmen, for the brief period they have been out this year, have forwarded sufficient orders for these goods to warrant the statement that they will prove very popular.

THE PORTSMOUTH STOVE & RANGE COMPANY of Portsmouth, Ohio, have succeeded, through the assistance of Hon. William F. Kemmler, United States Consul at Horgen, Switzerland, in establishing an agency for their steel ranges at Thalmel, Switzerland. The Swiss agent will be H. Berthold, an extensive dealer in stoves, ranges, &c. Consul Kemmler, in a letter to a local German paper, says that stoves and ranges are very expensive in Switzerland and he is of the opinion that American manufacturers can, with a little energy, build up a very profitable trade.

WE HAVE RECEIVED, with the compliments of the Leibrandt & McDowell Stove Company, 22 South Charles street, Baltimore, Md., and 123 North Second street, Philadelphia, a pocket map of Virginia and West Virginia, and also one of Delaware and Maryland. These maps are folded to convenient size for the pocket, and are inclosed in heavy paper covers, upon the second page of which are calendars for the year 1895. Upon the outside covers attention is called to the celebrated Farmer Girl cook stove and the lines of heaters, ranges and furnaces manufactured by the company.

OSCAR I. LUCE, president of the O. I. Luce Stove Mfg. Company, at Leeds, Mo., died Sunday, January 27, at his home, 2935 Woodland avenue. He was 40 years old and leaves a wife and three children.

THE INDIANA STOVE WORKS of Evansville, Ind., are about to increase their facilities by the erection of a three-story brick warehouse, permits for which have recently been granted.

THE BLOOMINGTON STOVE COMPANY of Bloomington, Ill., were incorporated on January 30, with a capital stock of \$50,000. The incorporators were John W. Evans, Edwin H. Miner and Howard E. Hays.

THE NEWSOME COMBINATION HEATER COMPANY have recently secured ground on the east side of the City of Detroit, Mich., and it is their intention to soon begin the erection of a large factory for the manufacture of a combination oil heater, cooker and lighter. The leading spirit in the formation of the company was Robert R. Grange of Chicago, and he has associated with him as active members of the concern William Wright of Scotland, Simeon Newsome, J. A. Lotz and J. W. Berns, all of Detroit. At present the office and headquarters of the company are at 112 Gratiot avenue, where there are on exhibition samples of the goods mentioned.

WE HAVE RECEIVED FROM W. E. Puffer of 136 Beekman street, New York City, a copy of the 24-page pamphlet which he has issued relating to automatic furnace regulators. The device is described at considerable length, and directions are given for using the regulator and furnaces. More than one-half of the pamphlet is given up to testimonial letters, nearly all of which we notice bear date of January of the present year.

THE CONOVER FIRE PLACE MFG. COMPANY have reorganized their business under the management of the members of the late firm of J. S. Conover & Co. and are located at 7 and 9 West Thirtieth street, New York City. The warerooms of the company have been fitted up in attractive style and contain a fine display of wooden mantels, fire places and their furnishings in great variety of designs. The company make a specialty of architectural metal work, ornamental bronze for banks and offices, wrought iron grill work, floor and wall tiling, &c.

THE PALERMO MICA COMPANY, 27 Peck slip, New York, miners, importers and wholesale dealers, issue in very pretty form their 1895 standard price-list of selected mica, the list having taken effect January 1. The second page of the circular gives the standard price list, the third page gives the prices of 1, 2 and 3 pound assorted packages, put up expressly for the retail trade, while the third page gives the retail price list of mica by the sheet. The printing is done on a fine grade of paper with red ink, and is a neat piece of work.

THE ROUND OAK STOVE WORKS of Dowagiac, Mich., are reported to have closed their works on the night of Friday, February 8, throwing out of employment between 300 and 400 men. We understand that the employees asked that the 1894 scale of wages be restored, and that a refusal of the demand on the part of the company resulted in the men going out and the closing of the works.

PRESIDENT CHARLES O. LYON of the Thatcher Furnace Company, 240 Water street, New York, is making a two weeks' trip through the West. He reports excellent results from the Thatcher hot air furnace and the Champion steam and hot water heater during the recent severe weather.

THE TOLEDO STOVE COMPANY of Toledo, Ohio, report the prospects for 1895 as very bright. They expect to produce a much larger tonnage than ever during the year, and with this object in view started their plant with a full force immediately after the holidays. Unfortunately, however, a fire occurred on January 22, which com-

pelled them to shut down for a time. As soon as the weather permits and the work of rebuilding has been completed, they will at once resume in all departments.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, have just issued from the press an exceedingly attractive catalogue of New Process gas ranges for the season of 1895. The volume is printed in colors upon a good quality of paper, and bound in nest covers with embossed side title in gold. The illustrations of the stoves appear in a deep shade of green, while the text is printed in red. The opening pages call attention to the many novel features embodied in the New Process goods, and refer among other things to the high grade of workmanship, "careful selection of materials and testing, handsome appointments, graceful design and ingenious, effective simplicity." The New Process range is shown in numerous varieties of cabinet style, and in connection with each illustration are given the sizes in which the stove is made, the number of burners, size of bake, roast and warming ovens, chop broiler, stove top, size of step, weight, price, &c. Brief reference is made to hot plates, the Radiant gas heater, ovens, burners, valves, &c. The last page is devoted to a table of comparisons, showing the difference in the cost of cooking by coal and gas.

H. WATERMAN of 111 Beekman street, New York City, visited the trade on the line of the New York Central and Erie railroads during the past week. Mr. Waterman represents the Cleveland Foundry Company of Cleveland, Ohio, and secured some very gratifying orders.

GEORGE J. RALPH, for 20 years identified with the stove trade of Buffalo, succeeds H. E. Stambach as the Buffalo agent for the Garland stoves and ranges.

THE CARTON FURNACE COMPANY of Utica, N. Y., were delayed a couple of days in starting their cupola by reason of the severe storm which swept over the country the past week. They had their temporary building all up with the exception of the roof when the storm prevented further progress. They have contracted for their new foundry building, the iron work now being on the way. The contractors agree to give the company possession of the new building the first week in March, providing the elements permit. The company on Wednesday, February 13, lighted their cupola for the first time since the fire, thus making a loss in time of only eight days.

SAM S. UTTER of 113 Beekman street, New York City, has been doing an export business during the past week. We understand that on Monday he made a shipment of goods to Honolulu, on Tuesday to Havana and on Wednesday to Rio Janeiro.

THE BRIDGE & BEACH MFG. COMPANY, St. Louis, Mo., who have been at work for some time past on a line of steel ranges, advise us that they will be ready to offer these goods to the trade about March 1. Circulars, catalogues, &c., are being prepared and will shortly be issued. These ranges will be substantially built and will, we understand, be moderate in price.

THE WOLFF GAS RADIATOR MFG. COMPANY, 164 Franklin street, New York, report a good trade in the Wolff gas radiator during the recent cold weather.

Illness of Secretary Thomas.

We are very sorry that we cannot give a more encouraging report of the condition of Secretary Thomas of the National Association of Stove Manufacturers. Last week he showed a slight improvement, and hope was expressed that it might prove a permanent change for the better. Since then, however, Mr. Thomas has been somewhat worse, and the report furnished us on Thursday of this week was that he had been failing during the preceding three days. All will hope that in our next issue we may give brighter news, but we fear there is little ground for this hope.

Hints in Regard to Window Display.

BY J. P. HUMES.

The show window might be termed a silent salesman, and if given the proper amount of attention will accomplish its object, namely, to attract the passers by and induce them to make purchases, or make an impression upon the looker on which will lead to purchases in the future. It serves as a reminder to forgetful people—to the busy man whose better half asked him to bring home a carpet sweeper or tack hammer, but it escapes his mind, until seeing the required article in a window his memory is refreshed and thus a sale is made.

Cleanliness.

To fulfil its object the window must be kept clean and neat both inside and outside, and the arrangement of the goods should be such that they will be pleasing to the eye. There is, I might say, hardly any limit to the kinds of goods suitable for display, for one must consider the fact that all classes and kinds of people pass stores.

The Kind of Goods.

I find it a paying plan to display a few wares that will appeal to the masses, and under that head I might mention goods such as Mouse Traps, Pocket Knives, Scissors, &c.; in other words, goods which some one wants all the time. Do not confine the display to any one class of goods, but have a variety of articles, among which every one will see something which will interest him.

Constant Changes.

Displays should be changed at least once a week, for while there are numbers of people who seldom pass the store there are hundreds of others who pass daily. If the display is not changed at least weekly it will not catch their attention, while if frequent changes are made in the display it will be able to attract all.

A Little Beforehand.

Seasonable goods should always be given a prominent place in the window, and it is a wise plan to display wares a fortnight before the season for their use opens. By so doing the lookers on are apprised that a certain article is handled, and when they require the same they will recall having seen the article in the window. The probabilities are that they will then purchase. Hardware stores, as a rule, seldom have sufficient space in their windows to display articles in actual operation, and as such a display adds greatly to the expense I do not think such displays are profitable.

The Arrangement.

In making a display the goods should be so arranged that they will not only appear artistic in every way, but also so that the articles will appear to their best advantage. Avoid crowding a great number of goods in the window at the same time; do not try to show a sample of everything you keep at the same time.

Plain Figures.

To reap the full benefits of a display it is necessary to card each article shown, not only marking its price in plain figures, but also have some remarks on the price card in reference to the goods. The cards should be written so that he who runs may read, and so worded that they will to a certain extent interest the reader. Quotations from well-known authors, which apply to articles displayed, will interest the people. To explain more fully, I give, as follows, a few examples of cards:

BUTCHER KNIFE.

A better Knife did never itself sustain upon a butcher's style.

50 cents each.

SAW.

Of all the Saws you ever saw, you never saw a Saw save as this Saw says.

Only \$1 each.

SERRATED EDGE KNIVES.

Hot bread cut as easily as cold.

\$1 a set.

MOUSE TRAPS.

The cat is minus a job since the Delusion was invented.

15 cents each.

BARLOW KNIVES.

Ragedy, O! Wherever I go, I am always known as Billy Barlow.

Warranted genuine imported Barlow's, only 25 cents each.

A window may be dressed in an economical way as follows: Have the floor of window built on an incline; cover the floor with colored material; make a border of two rows of brass jack chain; have the sides or walls painted white, on which can be placed a circle of Masons' Trowels, Hatchets, Saws, Dog Collars, Chains, or, in fact, any article which will show to advantage when tacked to the wall. Stretch from one end of the window to the other, about 3 feet from the floor, a brass wire upon which to hang suitable goods. Then make the main display on the floor. If the articles displayed are small, such as Picture Nails, Molding Hooks, &c., a dozen or so should be arranged in a semicircle or triangle. If the articles are large, one is sufficient. The clerk having the dressing of a window in charge should have an adaptability for the work, as it requires extreme good taste.

To Prevent Rust.

If the window is damp and it is found that bright goods rust when displayed, purchase some mercurial ointment and rub the article with it, and it will be found that the goods can be exposed to any amount of dampness and still retain their polish.

Definite arrangements are reported to have been made for the organization of a corporation to develop Southern industries and interests by the establishment of a permanent Southern exchange in New York City. The new corporation will, it is said, be a stock company, capitalized at about \$200,000. An Executive Board of from 15 to 30 members, representing the different regions and interests of the South, will superintend its operations and direct its policy.

TRADE REPORT.

The Iron Market.

Reports are somewhat contradictory and reflect the contending influences which are shaping the situation. The business community is nervous over the financial muddle and is gradually working itself up to a high pitch of irritation, coupled with a pronounced contempt for the vast majority of politicians. No sound business revival need be hoped for until this country is known to be unquestionably committed to a square gold basis. Domestic or foreign capital will not go into new enterprises on a liberal scale until then, and without that stimulus our industries must drag along with insufficient work.

Outside of a fair run of sales of Lake Ore from the accumulations on the docks nothing has been done. There fore the much talked of advance in prices has not yet been seriously tested. Some uneasiness has been created by numerous reports of a recurrence of labor troubles in the Coke trade. Some of the large interests have again accumulated big stocks of the fuel.

One bright spot is the condition of the Wire industry, which has been booking a very large tonnage. This is reflected in good sales of Wire Rods, with further large negotiations pending. It has also had its influence on Soft Steel Billets.

In the Foundry Pig Iron market, our Cincinnati correspondent notes that some large transactions are held in abeyance on account of the financial situation. In the Chicago district the local furnaces are well booked up, so that the Southern producers have had a chance to get some fair orders.

The Cast Iron Pipe trade records another record breaker in the way of prices, an Eastern foundry having carried off a 2300 ton order for Worcester, Mass., at the phenomenal price of \$18 delivered.

Pig Iron.—The market in New York is rather a shade weaker, some efforts being made to push sales by Northern makers. Among the recent purchases are those of one consumer who has taken about 4000 tons to cover requirements up to August. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tldewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

In the Philadelphia Pig Iron market business has been very quiet during the past week, but there is no particular change in the general situation. The supply is fully equal to the demand, but at the prices now ruling further decline is almost impossible, so that consumers have no inducement to delay their purchases. On the other hand, there are so many sellers, and so many varieties of iron, that buyers show no anxiety in regard to supplies, and are as unwilling as ever to make long con-

tracts. Sales have been in moderate quantities at about the following prices for Philadelphia, and from 20¢ to 30¢ less for water delivery, or at points such as York, Harrisburg, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

Local furnace companies in the Chicago district report a fair run of orders for carloads, but no special movement beyond this. Shipments are increasing, the tendency still being to call for a greater quantity of iron under contract. Agents of Southern furnace companies have entered orders aggregating 3000 tons. Lake Superior Charcoal continues very quiet. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Soft.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.50
Southern Coke, No. 3.....	9.75 to 10.25
Southern, No. 1, Soft.....	10.25 to 10.50
Southern, No. 2, Soft.....	9.75 to 10.25
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.50 to 16.00
Other Ohio Silvery.....	14.25 to 14.50

During the past week there has been more disposition on the part of furnaces in the Pittsburgh district to push sales, and a number of transactions involving 1000 and 2000 ton lots have been closed. Foundry Iron does not show any improvement, either in demand or price, the latter being much lower at this time than ever before. Quotations are as follows:

No. 1 Foundry.....	\$10.50 to \$10.65 cash
No. 2 Foundry.....	9.65 to 9.75 "

There has been quite a fair run of small orders placed during the week in the Cincinnati market, ranging from single cars to 100 ton lots and several sales of 500 tons, one lot of 1500 tons Mill Iron; but the large orders seeking placement have been suspended. While the outlook is improving there is too much uncertainty to allow any essential strengthening of the market and prices of all kinds are without change of importance. The unprecedented cold weather, too, has had a depressing effect. Shipments are retarded or suspended and mails delayed. Mills and foundries are gradually resuming, but even this impetus has received a check recently. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

Advices from St. Louis report that the demand for Pig Iron shows a slight increase without, however, any improvement in prices. Southern furnaces are not disposed to urge sales at prices ruling, as it is evident that the future appears more encouraging than it has for some time past. The local consumption has been

increased by the starting up of two Stove foundries which have been closed down for the past two months. Sales during the week, while not large individually, aggregate a fairly satisfactory volume. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Metal Market.

Pig Tin.—The market has been remarkably steady through the greater part of the week. Arrivals, although quite heavy, have been well taken care of and so handled that spot stock has been kept at a considerable premium over regular February contract price. The premium averaged about 0.40¢, but was greater at intervals. More or less covering of short sales was prompted by tardiness of delivery notices and consequent apprehension that deliveries might be deferred long enough to cause inconvenience in speculative quarters if contracts were left open. This and other buying, along with the fact that the bulk of stock on spot and afloat for this point is well controlled by a few firms, has kept prices somewhat independent of London fluctuations. Distant future deliveries, while not traded in except to a limited extent, have ruled somewhat higher. The movement of tin into the channels of consumption continues liberal, or at the rate of not less than 400 tons per week. Later in the week the market assumed a tamer appearance, consumptive orders being lighter, and only a moderate jobbing business passing. Straits Pig in small lots from store rules at 14½¢ @ 15¢ $\frac{1}{2}$ lb.

Copper.—Irregularity in prices has continued, and the market has shown rather weak tone, the result chiefly of disappointing business on both home and export account, that has led to freer offering from outside sources or the small producers. Retail business has been very moderate, consumers showing little interest except in small lots for present use. Lake Ingot from store in small parcels is quoted at 10½¢ $\frac{1}{2}$ lb.

Sheet Copper.—The demand for Cornice Copper is very tame in this section and little of note is being done in the way of contracts for forward deliveries. Inquiry is, however, reported as fairly active, indicating the prospect of good business later on when the weather and general business conditions are more settled. The price asked for small lots of Sheet Copper from store is on the basis of 15¢ $\frac{1}{2}$ lb net.

Pig Lead.—The recent blockade on the railroads, owing to the severe storms, has operated to strengthen temporarily the price for American Pig in the East. Stock from stores conveniently located for immediate delivery to consumers' works has realized a slight advance, 3½¢ @ 3½¢ being quoted for moderate sized parcels. Otherwise the market has been bare of distinctly new feature. The demand

has continued moderate and the offering reserved, as for some time past.

Lead Pipe and Sheet—Nothing tangible in the way of improvement can be reported in the demand for Lead Pipe or Sheet Lead. Buying is still of the hand to mouth character, which has marked it for some time past, slightly increased, perhaps, in the past week by the requirements incident to repairs to plumbing work during the frost. Prices in this section are maintained at the list rate, namely, $5\frac{1}{2}\phi$ for Pipe, and $6\frac{1}{2}\phi$ for Sheet, with 20 %.

Spelter.—There has been no improvement. In fact, the market has remained quite weak and positively dull, the extremely low prices being ineffective as an inducement to buyers. Western brands in small lots are quoted by jobbers at 4ϕ @ $4\frac{1}{2}\phi$ $\frac{1}{2}$ lb.

Antimony.—Demand has been only fair and the market is rather weak under the influence of freer offering. Present prices for small parcels are about 8ϕ for Hallett's and $9\frac{1}{2}\phi$ @ $9\frac{3}{4}\phi$ for Cookson's, from store.

Nickel.—Sellers' prices are 35ϕ @ 40ϕ , according to size of order.

Tin Plates.—The market in general during the past week has shown as cheerless an aspect as it has exhibited at any time since the beginning of the year. Interest in forward deliveries of imported Plates has been entirely commonplace, and the business effected in this line by importing and jobbing houses did not at all equal the average of the preceding two weeks, although quite as attractive inducements in the way of low prices were made. There have been rumors, however, of contracts in this line having been placed with some American works. For the greater part of the week spot business has also been remarkably flat, although in the last few days, since the moderating of the weather, some improvement is noted in this respect, but orders have been almost invariably for small lots, and the entire business has made a poor showing. The domestic works generally are reported as starting again into operation, while advices from the other side are to the effect that more than half the Welsh mills are idle and the rest are only running fitfully. The market, as a whole, is in a most unsatisfactory condition, and prices are weaker than ever.

A special London cable dispatch of February 13 to *The Iron Age* reports on the British Tin Plate market as follows: The Tin Plate market is unchanged. Quotations are nominal in a great measure. There's more inquiry from Russia and San Francisco for future deliveries. Improved demand is noted for Black Sheets for America at £7. About one-half the Welsh works are now standing idle. Stocks at shipping point about 234,000 boxes. Quotations, f.o.b. Wales, are given as follows:

Bessemer Cokes, 14 14 x 20..... 9/ @ 9/14
Siemens Cokes, 14 14 x 20..... 12/ @ 9/4 1/2
Teries, 20 x 28..... 18/ @ 23/20
Charcoals, 14 14 x 20..... 10 6 @ 13/

Sheet Iron.—Considerable inquiry is noted for future supplies of both Black and Galvanized Sheets. Consumers seem to be becoming impressed with the idea that prices have reached their lowest level, and the opinion is widely held that the present is a favorable time for closing contracts for future wants. Manufacturers, on the other hand, are not eager to book far ahead at the current rates. Some good sized orders are being placed for Black Plates for tinning purposes, and the productive

capacity for these Plates is increasing rapidly with the starting into operation of old and new mills under the recent wage compromise. Jobbers' quotations for small lots of No. 27 Common Iron from store are about 2.65¢. Galvanized Sheets in small lots rule at 75 and 5¢ @ 75 and 10¢ off

Chicago Report.

Scrap.—The demand is light. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Malleable Cast.....	5.00	....
Stove Plate (free of burnt)....	4.00	....
Burnt Iron and Grate Bars....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Plow Steel and Breaking		....
Stock.....	4.00	....
No. 2, such as Shovels, Hoes,		....
&c.....	3.00	....
Old Boilers—whole (Iron)....	3.00	....
" (Iron)—cut in single		....
Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler		....
Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horsehoes.....	7.50	....
Copper Bottoms.....	6 ¢	....
Copper Clips and Heavy.....	7 ¢	....
Heavy Brass.....	6 ¢	....
Light Brass.....	7 ¢	....
Pipe Lead.....	2 1/2 ¢	....
Tin Lead.....	2 ¢	....
Zinc.....	2 1/2 ¢	....
Rubber.....	4 ¢	....

Anthracite.—The prolonged cold weather is at last affecting trade. Business is much better. The Soft Coal war is ended, the railroad companies having advanced their rates to old schedules. Carload lots of 13 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	4.95	5.20
Council Bluffs, Iowa.....	4.95	5.20
Lincoln, Neb.....	5.10	5.35
Sioux City, Iowa.....	4.95	5.20
Aberdeen, S. Dak.....	5.00	5.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	8.45	8.70
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and	
Missouri River.....	8.85

TATHAM & BROS., 82 Beekman street, New York, manufacturers of Drop and Buck Shot, Bar and Sheet Lead, &c., have temporarily lost the use of the upper part of their shot tower, through damage by fire, which broke out in one of the upper stories Thursday afternoon, February 7. The tower, which has long been a landmark in that portion of the city, was constructed about 1858, and is 225 feet high, being built of iron columns filled in with brick. Portions of the tower will be in use in a few days and the balance shortly. There was no insurance.

THE EVERSON TUBE & METAL COMPANY are a new concern in Pittsburgh, Pa. The incorporators are: George H. Everson, M. H. Howell, Joseph A. Shinn, R. W. Richardson and John Owen.

CONDITION OF THE

Hardware Trade.

THE PAST WEEK has witnessed few changes in the market. Prices continue as for some time past without any general strengthening, but with a slightly better tone on a few lines. Some kinds of Hardware which have been low and demoralized are in no better shape, but on most lines prices are pretty well maintained on the low levels with which the trade are familiar. The improved condition in Wire Nails, Barb Wire and to some extent in Plain Wire are encouraging features, and on some of these goods the trade are recognizing the fact that it is the part of wisdom to have their requirements for the spring trade covered by orders and early shipments. There is a fair volume of business, but the extremely cold and severe weather which has prevailed so generally throughout the country has curtailed transactions considerably. Stocks are very low in the hands of jobbers as well as retailers, and the policy of keeping them so is still followed. The feeling is freely expressed by well informed business men that if the financial question was settled and monetary matters put in good and permanent shape there would be an early and marked improvement in trade.

Advices from Chicago.—Shelf Hardware jobbers have experienced a quiet week. The mails have been seriously interrupted by the terrific weather which so generally prevailed throughout the country and traveling men have been storm bound in every direction. Heavy Hardware jobbers report the receipt of good specifications from large buyers of Iron and Steel. Contracts which had been entered for March shipment are now being filled, as consumers are in need of the material earlier than was expected. Prospects are extremely good for larger business.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in excellent condition and with substantially the same prices as were mentioned in last week's review. The tone of the market is firm, especially in view of the fact that manufacturers are well supplied with orders and inquiries are coming in in good volume. The opinion is expressed by those who are well informed that in view of the diminished production, as compared with last year, the mills, with only an average demand, will be fully occupied for several months to come.

Advices from Chicago.—Manufacturers are extremely busy, the largest concerns being furthest behind in shipments. Orders are good and the trade appears to be in excellent shape for another advance, which is daily expected. Local jobbers, however, are unflinched by the manufacturers' report of better business, and continue to cut prices as freely as ever, although manufacturers assert that a loss is netted on every keg sold at the low rates now prevailing. Small lots from stock here are selling at various prices, ranging from 95 cents to \$1.05, according to the disposition of the seller. It looks now as if every retail merchant who wishes to buy Wire Nails cheaply should place his orders as quickly as possible, as prices may be advanced at any day.

Cut Nails.—There is little change in the Cut Nail market, but the condition is perhaps somewhat improved, as manufacturers are refraining from pushing for business with as much energy as they sometimes do. There is also a diminished output on the part of the mills, and this tends to give a slightly firmer tone to the market. Small lots from store, New York, are held at about 90 cents. Business is rather quiet.

Advices from Chicago.—Trade continues about the same as previously reported. Manufacturers are receiving orders, but not large ones. Small lots from stock are selling at \$1.

Barb Wire.—The Barb Wire market is characterized by a good degree of activity and an excellent tone. Small lots from store in New York are held at \$.25 to \$.20.

Advices from Chicago.—Factories in this locality are well fixed with orders for the present and report prospects bright for a considerably heavier movement in March. Good inquiries are being received for large quantities. The improved demand for Wire Rods in this vicinity reflects the activity now prevailing in the Wire Nail and Barb Wire trade. Prices are unchanged. Small lots from stock are selling at \$1.65 for Painted and \$2 for Galvanized.

Freezers.—We are advised by the White Mountain Freezer Company Nashua, N. H., that they have abolished the system of list and discount in connection with the sale of their White Mountain, Granite State and Arctic Freezers, which they are now quoting at net prices. They refer to this change as simplifying the method of quoting and selling the goods.

Wringers.—The American Wringer Company, 99 Chambers street, New York, in issuing their price-list of Wringers under date of January 1, 1895, have rearranged it and made a few slight changes as compared with their circular of July 1, 1894. The second and third pages contain their standard high grade Wringers with iron and wood frames and for folding benches. The last page describes what are termed regular grade Wringers, with both iron and wood frames and for folding benches, at somewhat more moderate prices. They have also added the Star, iron frame, and Falcon and Crescent, wood frame, Wringers to those heretofore made.

Wrought Iron Pipe.—The lists recently adopted by the Pipe manufacturers and printed in full in our last issue have met with the general approval of the trade. It has for some time been recognized as desirable that the inequalities in the old lists should be corrected, inasmuch as if in an assorted order standard sizes were sold at cost under the old lists and discounts less salable sizes would be sold below cost. This condition of things has been recognized by the manufacturers for some time, and the new list represents an attempt on their part to make one based throughout on the cost of manufacturing the goods. This rather than to make an advance in the price of the goods was the object of the action taken by the meeting.

Glass.—The rigorous weather which has been so general throughout the country has contributed to the dullness which pervades the Glass trade, and with the usual quiet of the season has resulted in almost nothing being done for the past week. From indications building for the coming nine

months will be on a much larger scale than for either of the two previous years; and if this proves to be the case the outlook is favorable for a larger demand for Glass. Reports from Pittsburgh indicate that the factory price for Glass in large lots is from 89 and 2 to 90 and 2 per cent. discount, though in some cases a price as low as 89 and 5 to 90 and 5 per cent. discount has been made. The New York market is represented by the following quotations: From store in small lots, 85 and 15 per cent. for Single, and 85 and 20 per cent. discount for Double Strength Glass. In car lots 88 per cent. for Single and 89 per cent. discount for Double Strength Glass.

Old Metals.—The demand for Old Metals is merely moderate, and prices exhibit no radical change. The following quotations represent the ruling rates paid by dealers, New York delivery:

Heavy Copper.....	lb 7 c
Light and Tinned Copper.....	lb 6 1/2 c
Heavy Brass.....	lb 4 1/2 c
Light Brass.....	lb 3 3/4 c
Lead.....	lb 2 1/2 c
Tea Lead.....	lb 2 1/2 c
Zinc.....	lb 2 1/2 c
No. 1 Pewter.....	lb 10 c
No. 2 Pewter.....	lb 5 1/2 c
Wrought Scrap Iron, gross	
ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap, gross	
ton.....	7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rags, Paper, &c.—There is a rather better demand for Paper Stock, but dealers' purchasing prices remain substantially the same as those quoted last week, namely:

No. 1 White Rags.....	lb 3 @ 3 1/2 c
No. 2 White Rags.....	lb 2 1/2 @ 2 1/2 c
Mixed Rags.....	lb 1 1/2 @ 1 1/2 c
Beats and 3ds.....	lb 1 1/2 @ 1 1/2 c
Hard Sixed White Shavings.....	lb 2 1/2 @ 2 1/2 c
No. 1 White Book Shavings.....	lb 1 1/2 @ 2 1/2 c
No. 2 White Book Shavings.....	lb 1 @ 1 1/2 c
Light Book Shavings.....	lb 1 @ 1 1/2 c
No. 1 Mixed Shavings.....	lb 1 1/2 @ 1 1/2 c
No. 2 Mixed Shavings.....	lb 1 @ 1 1/2 c
No. 1 Printed Books.....	lb 1 1/2 @ 1 1/2 c
No. 2 Printed Books.....	lb 1 1/2 @ 1 1/2 c
Newspapers.....	lb 1 1/2 @ 2 1/2 c
No. 1 Manila Paper.....	lb 1 1/2 @ 1 1/2 c
No. 2 Manila Paper.....	lb 1 1/2 @ 1 1/2 c
Bogus Paper.....	lb 1 1/2 @ 1 1/2 c
Common Paper.....	lb 1 1/2 @ 3 1/2 c
Straw Chips.....	lb 1 1/2 @ 1 1/2 c
Binders' Clippings.....	lb 1 1/2 @ 1 1/2 c
Butts.....	lb 1 1/2 @ 1 1/2 c
No. 1 Jute Bagging.....	lb 1 1/2 @ 1 1/2 c
Mixed Bagging.....	lb 1 1/2 @ 1 1/2 c
No. 2 Bagging.....	lb 1 1/2 @ 1 1/2 c
Hemp Twine.....	lb 2 @ 2 1/2 c
Manila Rope.....	lb 2 @ 2 1/2 c
Jute Rope.....	lb 1 1/2 @ 1 1/2 c
Mixed Rope.....	lb 1 1/2 @ 1 1/2 c

Dr. Senner, Immigration Commissioner at Ellis Island, N. Y., in a report sent in to the Treasury Department, shows that during the year 1894 the total number of passengers sailing from New York, Boston, Philadelphia, Baltimore, New Orleans and Montreal was 311,760, against a total of 268,037 sailing from the same ports in 1893. During last year the number of immigrants arriving at Ellis Island was 167,585, who had in their possession \$3,050,946 in gold. Steerage traffic from the United States to Mediterranean ports fell off considerably as compared with 1893, while steerage traffic to England and Central and Northern Europe showed a large increase over the previous year. The hard times of 1893, when work was difficult to obtain, caused large numbers of Italians to return to their native country, while it had a contrary effect on people from Northern and Central Europe in keeping them in the United States. The total number of steerage

passengers sailing from the United States in 1894 was 210,251, against 174,766 in 1893.

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Chimneys.

The influence of the chimney on the heating apparatus is well understood by the larger dealers and engineers. In too many cases the smaller heating man not only does not understand this, but is unable oftentimes, when he does, to procure a proper chimney, as his recommendation is looked upon as a desire to secure additional profit through the erection of a chimney. Chimneys have always been more or less puzzling in their capacity, and a flue of given dimensions under some circumstances has demonstrated a much greater draft ability than flues of larger dimensions under seemingly similar conditions. If a large hot air furnace is connected with a weak flue the fire, instead of being bright and glowing with intense heat, will lie comparatively dead, and the inexperienced person in endeavoring to secure the full power of the furnace will fail, even though more fuel is consumed than would be needed to secure the highest efficiency of the furnace with a flue of strong draft. It is often the case where a small apparatus which has rendered excellent service is replaced by a larger apparatus, from which better service is expected, that it fails to give satisfaction or do as good work because of the incapacity of the chimney to work it at its best efficiency. This trouble is not confined to the furnace business alone, but the makers of steam and hot water heating boilers have found in a number of cases much dissatisfaction to result from poor draft where the boiler, which had ample capacity and which had been piped carefully in accordance with good practice and ample radiation, had been properly placed. Expert investigation as to the cause of the trouble invariably resulted in finding that the chimney had too small capacity. This trouble is no small one to confront in

the heating of old houses, and oftentimes the use of one apparatus has to give way to two of smaller dimension, in order that the chimneys which are in the building may be used and satisfaction secured. In the erection of new buildings the owner is often surprised, as well as the architect, after they have decided on a steam or water heating plant, to find the heating contractor demand a flue much larger than has been calculated for in the building for use in connection with his apparatus. Many dealers would save themselves an immense amount of worry and expense if the capacity of the chimney was well looked into previous to contracting for and installing a heating plant where a large apparatus is to be used.

The Drift Cityward.

A business man of New York, well known for his active interest in the younger men of the laboring classes, and whose personal acquaintance with the condition of the city's poor is both wide and sympathetic, was lately lamenting the growing tide of unskilled labor which sweeps into this city every year from the country districts. Did they but realize it, most of the country boys and young men who add themselves to the population of New York City from month to month could, he argued, secure a far better position for themselves in the smaller towns, where the labor market is usually not overstocked. They foolishly elect, however, to go to the large centers of population, where the struggle for existence is always of the most stringent and bitter character. This fact has been particularly noticeable during the past year or two, when times have been unusually hard. Not only young persons, but older people, out of work and perhaps in want, start away from the small towns and country districts with the idea of finding a wider opportunity to better their condition in New York or some other great city. This class of labor has been arriving in shoals during the recent period of depression, recruiting the already unwieldy army of unemployed in most of the greater cities. No graver mistake could be made. As a rule, small towns and villages have less excessive poverty to relieve than the great centers of population, in proportion to their resources. Able bodied single men, especially, should make their way to the country rather than to the cities. Many farmers would be glad to give one or two men, at least, a chance to earn their board and lodging by work in clearing up fields or making improve-

ments in farm buildings, &c. This provision would be, for a while at any rate, far preferable to tramping the city streets day after day in a hopeless search for work, half starving meanwhile.

Heedlessness.

It does seem as though nothing was more aggravating in boy or man than the spirit of heedlessness. Once yielded to it becomes characteristic of the individual, and it is displayed in every act. It renders him useless in almost every position in which he may be employed, and is generally a pretty good indication that his mind is not upon his work. It results in a continued series of errors and disasters, of little blunders and unbounded waste. The person who is dominated by this influence guesses rather than takes the time to figure, is forever cutting off the sheet too short or else wastefully too long, is habitually unsystematic, never knows where things are, and never puts them back in their places, and is forever leaving things almost done when they might just as well have been completed. The cure for all this is hard to effect. Slovenly methods cannot be at once replaced by systematic habits, but the process may be gradual where there is a will to turn from heedlessness to carefulness as a characteristic of one's life. It must be by a careful scrutiny of each act, by thoughtfulness at all times and a never-forgotten determination to do all things as well as it is possible to do them. Such habits are sure to appeal to an employer, and although sometimes long in coming, the conscientious employee seldom fails to receive the reward that he deserves. At all events, it should mean much to him that he has tried to do the best that he can.

According to the New York State Commissioner of Labor, the introduction of typesetting machines has reduced the number of employees in printing offices from 20 to 60 per cent. If a recent announcement of the *Paris Figaro* is to be relied on, the printing trade is on the eve of a revolution which is likely to still further cut down the number of compositors enormously. The medium is a typesetting machine invented by Pere Calendoni, a Sicilian monk, which, it is claimed, will compose 50,000 letters per hour. The difference in speed, compared with existing machines, lies in the fact that instead of each letter being made to fall separately into the composing stick, entire words can be composed in a moment by the simultaneous application of the fingers of both hands. M. Mazereau of the *Figaro* asserts that he has himself manipulated the instrument with complete success.

THE LETTER BOX.

A Question in Furnace Construction.

From *CONTENTION, Canada*.—We would be much pleased if *The Metal Worker* would kindly submit the following in the Letter Box for discussion by its expert readers. We make a coal furnace with a steel dome having two descending and one ascending steel flues, separated about 2 inches from the dome. These flues lead into a steel radiator surrounding the fire pot, leaving a space of about 3 inches between it and the pot. The distance from the outside of the radiator to the casing is about 1 inch. The question is whether more heating power would be obtained by having the radiator cast on to the ash pit, leaving 4 or 5 inches on the outside of it between it and the casing. The contention is whether more heat would be obtained by having all of the space on the outside of the radiator or having the air ascend on both sides of the radiator as first indicated.

Will It Work?

From *B. M. C., Hoboken, N. J.*—Replying to your correspondent "F. L. M.," Roseville, N. J., in *The Metal Worker* February 16, other things being equal, the location of the radiator is immaterial, but the heat derived will vary according to the quantity of water drawn from the boiler for household purposes. More satisfactory results would probably be obtained by having the radiator supplied from a small supplementary horizontal boiler above the range, having separate connections to an independent or secondary water back, and supplied automatically from an overhead tank. We know of a three-story brick house in this city heated throughout from the kitchen range on a somewhat similar plan.

Thawing Frozen Street Pipes.

From *A. M. K., Littleton, Pa.*—Will *The Metal Worker* describe some way to open up a frozen supply pipe which is under the street without digging it up?

Answer.—A common practice is to use a small sheet metal steam boiler, which may be placed on a charcoal furnace or a gasoline fire pot. The boiler is provided with cocks to show the water line, a funnel at the top to fill, a hose cock to which a hose may be attached, and, most important, a safety valve that will blow off freely at a low pressure, not over 5 pounds. The hose should be of good rubber, several feet long for convenience, and attached to $\frac{1}{2}$ inch black tin pipe wound in a coil so that it can be unrolled as used. Whether the pipe frozen is in the ground or covered with wood work, an opening must be made so the coil can be inserted. In the case mentioned there is probably a stop cock on the pipe in the cellar. The pipe should be cut off on the house side

of the stop and the stop opened. On inserting the tin pipe it should be pushed in until ice is struck, then by turning on the steam the process of thawing without digging up the street is accomplished. When the water begins to run the steam pipe is withdrawn and the stop cock closed until the pipe is repaired. Some plumbers put a brass union in at the severed point, so that provision is made for thawing in future if necessary. If the pipe to be thawed has many turns in it the rubber hose can sometimes be made to pass them, but if it will not other openings in the pipe must be made. In *The Metal Worker* of February 18 and 25 and July 1, 1893, are letters on this subject with illustrations.

An Old Stove.

From *B. L. F., Lawrenceville, Pa.*—I am very anxious to learn when a very old stove which I possess was made. The name on it is:

"The Signe of the Anvil and Sledge. Made by John Spencer & Co., Albany, N. Y."

It is of the shape and about the size of an old fashioned fire place for wood, and the old lady from whom I secured it claims that it was used in either the first Methodist or Presbyterian Church in New York City.

Mechanical Telephone.

From *SUBSCRIBER, Paris, Ill.*—Will *The Metal Worker* give me a little information regarding a mechanical telephone? I have a Regina music box, and wish to convey the sound from the second story to my shop below. I bought a toy drum, cut it in two parts, and used them for diaphragms. They were secured in position by means of iron straps, and connected with a wire, there being one turn in the wire where it passed through the floor. As this arrangement did not operate, I placed an 8-inch pipe so as connect the music box with upper diaphragm, with no better success. I then used a waxed linen thread in place of the wire, and this did not operate. Does the turn in the wire stop the sound, or would it be better to have larger drums? Would an electric telephone work better? What is the cost of same, and where can they be obtained?

Answer.—To have a mechanical telephone operate properly there should be no short bends in the connecting wire, and this wire should not come in contact with any solid object. The bends should be made in a large curve, which can be done by fastening a number of soft cotton strings to the wire and securing these to small nails. As the drum heads are liable to become damp from the moisture in the air, and are difficult to keep tight, they are not so

well adapted to the purpose as thin pieces of pine. Large drum heads would be no better in this respect. An electrical telephone might be used for the purpose of conveying sound from a music box, but it would be necessary to hold the receiver to the ear, as in ordinary use. Such telephones cost about \$18, and can be procured from the Western Telephone Construction Company, 539-541 Monadnock Building, Chicago.

Objects to Waste and Cool Water.

From *C. M., New York*.—I am somewhat puzzled about a kitchen boiler which is set close to a range, but does not furnish hot water promptly to a sink, which is also close to the range. We have to let the water run a long while before the hot water comes, and as the boiler is supplied by a tank which is filled by a hand pump from the cistern the waste is a very serious objection. I think the water back is not large enough for the 40 gallon boiler, because the upper pipe from the water back is never so hot but what the hand can be placed on it. My customer did not want the pipes overhead, so we ran them from the boiler down to the cellar and across under the kitchen and up to the sink, then up to the bath room and wash bowls on the second floor. It is my opinion that better service would be secured if the pipes were overhead. The bottom of the boiler is $2\frac{1}{2}$ feet above the floor and above the top of the range. How can the hot water flow be quickened without wasting so much water?

Answer.—The size of the stove not being given, it is difficult to form an opinion as to whether the water back would be of sufficient capacity to heat a 40-gallon boiler. It is quite probable that a much smaller boiler would give better results with the water back now in use. Another trouble is caused by the pipes running down into a cold cellar and being exposed. If the water is not specially hot and the water back of ample capacity, it is more than probable that the water lying in the pipe would be quite cold, and when the faucet over the sink is opened this water would have to run off before hot water could come. Wrapping this pipe with hair felt or some similar material to prevent its cooling will reduce the trouble. Where the waste of water is objectionable it is often advisable to use what is known as a circulating pipe—that is, a pipe of smaller diameter leading from the hot water pipe at the faucet back to the boiler and connecting with the pipe at the bottom of the boiler. Our correspondent is correct in assuming that less difficulty would be experienced if

the pipes were run across the ceiling of the warm kitchen; and in these times, when exposed plumbing work is becoming more general, there is little objection to a neat job of piping.

Coloring Brass.

From W. E. B., Reading, Pa.—Please inform me through the columns of *The Metal Worker* how I can produce an old copper finish on brass or bronze. I would like as simple a method as possible, one that any tinsmith can use.

Answer.—The article to be colored should be chemically clean so that the coloring solution is free to act on the exposed surface. While the article may appear to be clean, the surface may still be covered with a greasy film or oxide. This can be removed to a great extent by the use of polishing powders that are free from grease. The article is then to be dipped in a pickle composed of 1 quart each of water and sulphuric acid. Add to this 1 pint of nitric acid and 1 ounce of hydrochloric acid. The article is first dipped in the above mixture, rinsed in clean hot water, and at once placed in the coloring liquid. The coloring liquid is prepared as follows: Dissolve 1 ounce of hyposulphate of soda in 1 quart of pure water. Into this is to be stirred another solution made by dissolving 1 ounce of acetate of lead in 1 pint of water. When to be used the solution is heated in an earthenware vessel to a temperature of about 195° F., when the article to be colored is immersed. The color obtained will depend upon the time the article is held in the solution, the colors being golden yellow, copper, carmine, dark red, blue and brown. A red and green coloring can be given to brass by substituting an equal weight of sulphuric acid for the acetate of lead.

Wants Hotter Water.

From PLUMBER, Nassau, N. H.—I would like a little assistance from the readers of *The Metal Worker*. I put in a job of plumbing lately and my customer finds fault with it, saying that on some days he cannot get any hot water with a new fire. The job is put up in the usual way, with the exception that the hot water pipe runs to the cellar and then up to the bathroom on the second floor. I have examined the pipe at the top of the boiler and the water front and found everything clear. A 35-gallon boiler is used. Some days the water is hot; other days it is only warm.

Note.—No doubt our readers can give this correspondent some assistance. In the mean time we would suggest that it is quite probable that the pipes being exposed in the cellar to a low temperature and making such a long run previous to reaching the bathroom the water is cold before it arrives at the faucet. It may be that a 35-gallon boiler is too large for the water back that is used in connection with it, or the fire required to do the work for the

family is less than would be needed to heat so much water. The trouble may be overcome to some extent by wrapping the pipes to prevent the loss of heat while the water is in transit.

Is It a Good Investment?

From J. B., New Jersey.—I have suggested to one of my customers that he should use a circulating system in connection with his kitchen boiler so that he could get hot water in any of the fixtures in his system immediately on any of the faucets being opened. In this particular case the actual cost of labor, piping and material for insulating the piping will not exceed \$25. My customer asked me why he should spend \$25, when for a few minutes' time he can get just as hot water, and further explained that as the \$25 would be a permanent investment and the money being worth 6 per cent., he would be out \$1.50 per year for interest. I have explained that in waiting for the water to come hot from his faucets he brings more cold water into his boiler and water back to be heated, and consequently requires more coal for the kitchen range. He claims that the fire would have to be run anyway, and doubts if there would be any increase in the consumption of fuel. It is my opinion, however, that in the course of a year he would not only save enough coal to pay the interest, but something on the principal, and that in a term of years much less than 25 he would save enough coal to pay for the circulating pipe and then receive a dividend on the investment. I should be glad to hear the opinions of the readers of *The Metal Worker* on the subject.

Will It Circulate?

From T. W., Paterson, N. J.—In *The Metal Worker* of January 26 I notice the inquiry of "F. D." and his heating plant. There is some space above the top of his flow main, and I should advise that this flow main be run up as high as it is possible and have an air vent connected with the expansion tank, the expansion tank, of course, to be above the flow main. From this point the flow main should have a fall instead of a rise, as shown in his drawing to the heating coil. This will give him better chance for circulation. In order to get the cold water from the coil in the pit back into the heater, it will be necessary to have a sufficient height of column of water back of the coil to let the weight of the water overcome the weight of the cold water in the coil. If he has sluggish circulation or his job fails to circulate altogether, he will know that the height of the water column is not sufficient. Then it may be necessary for him to put the expansion tank on the floor above and to run a siphon up to it and drop down immediately alongside of the expansion tank to where it connects with the main that runs over to the first coil. Then no difficulty should be experienced in getting good circulation through the coil in the pit.

Gasoline Burner for Cook Stove or Range.

From C. D. FOWLER, Berwick, Pa.—Will some of the readers of *The Metal Worker* inform me through the columns of the Letter Box if they know of a gas burner intended for use in connection with a range or cook stove, which will

burn gas made by a gasoline machine? I want to heat the range in the same way that coal would heat it, and am anxious to learn of the name of the manufacturer of the burner.

A Direct Hot Water Connection.

From D. & W., Bellwood, Pa.—I would like to get some information about making a direct connection from the water back in a stove to a sink. The water back will be connected with the boiler in the usual manner, but owing to the surrounding conditions it would be much more convenient to take a pipe from the water back direct to the sink than to take it from the top of the boiler to the sink. Would there be any danger in making such connection and what would be the objection to it?

Answer.—There would be no danger in a direct connection from the water back to the sink. The objection, however, would be that in all probability cold water would be drawn through this faucet after a small quantity of hot water had been secured. The water back receives its water supply from the bottom of the boiler and as soon as any hot water faucet is opened cold water enters the boiler to take its place. This cold water passes immediately to the water back, and if a direct connection were taken from the water back to the sink, the cold water would pass but slightly warmed through this pipe to the faucet.

Emanuel Samuel, vice-president of the Steel Bath Mfg. Company, Detroit, Mich., was accidentally killed in New York on the 3d inst., by falling down an air shaft in an apartment house where he was visiting. Mr. Samuel was a widower, 45 years of age, and had resided in Toronto, Canada, for 30 years. He was liberal in his charities, and recently donated \$1000 to the new synagogue on Bond street. He was president of the Metallic Roofing Company, and a member of the well-known wholesale hardware firm of M. & L. Samuel, Benjamin & Co., Front street, Toronto.

The Metallic Cabinet Company, Cincinnati, Ohio, are about to publish a complete catalogue of the various styles of metal furniture that they manufacture. Advance pages show some of these specialties and illustrate the capability of sheet metal for this class of work. Cabinet files and cabinets of various sorts are shown. The advantages afforded by this material for various furniture purposes will be readily comprehended.

The method adopted in Antwerp for purifying the filthy water of the River Nethe is to pass it through revolving cylinders containing small pieces of iron, it having been ascertained that 15 pounds of metallic iron is sufficient to purify a million gallons of water. The water thus treated is said to be completely freed from germs, bacteria and other objectionable matter. Chemists find that the contact with iron reduces the organic matter from 45 to 85 per cent., and albuminoid ammonia by from 50 to 90 per cent., and all free ammonia is removed.

PLUMBING and GAS FITTING.

Allentown, Pa., Plumbers.

Secretary August Leibold of the Allentown, Pa., Master Plumbers' Association sends *The Metal Worker* a copy of their constitution and by laws and a statement that they have affiliated with the National Association of Master Plumbers. The firms composing the association are:

John H. Birchall,
J. C. Bitterling,
A. P. Deiley,
Mattern & Seagreaves, (2)
J. T. Reichard,
Shafer & Willenbecher Bros., (3)
Evans, Seagreaves & Co., (3)
Kiernan & Whitesell, (2) Bethlehem, Pa.

The following are the officers and committees:

President, John H. Birchall.
Vice-president, J. A. Shafer.
Secretary, Aug. Leibold.
Treasurer, M. F. Seagreaves.
Sergeant-at-Arms: J. T. Reichard.
Executive Committee: John H. Birchall, J. A. Shafer, Aug. Leibold, M. F. Seagreaves, Peter Kiernan.

Sanitary Committee: Lewis Willenbecher, F. E. Whitesell, E. B. Evans.

Investigating Committee: J. C. Bitterling, M. F. Seagreaves, Wm. H. Mattern.

Auditing Committee: J. A. Shafer, Lewis Willenbecher, A. P. Deiley.

Apprenticeship Committee: M. F. Seagreaves, Peter Kiernan, J. A. Shafer.

Conference Committee: F. E. Whitesell, E. B. Evans, M. F. Seagreaves.

Rhode Island Master Plumbers.

The convention of the Rhode Island Master Plumbers' Association at Pawtucket, R. I., last week, elected the following officers:

Patrick Tierney of Providence, president.

E. G. Lee of Providence, P. J. Murphy of Newport, C. W. Talcott of Woonsocket, C. P. Brennan of Providence, and David G. Fales of Pawtucket, vice-presidents.

James Oppshaw of Newport, treasurer.

J. C. Conroy of Providence, corresponding secretary.

W. M. Congdon, financial secretary.

T. E. Manney of Providence, recording secretary.

The proposed law was discussed at length, and a unanimous vote taken to give it support and insure Rhode Island the same sanitary protection by modern improvements that other States receive.

At 4 p.m. the delegates sat down to a banquet, and speeches followed by ex-National President Trainor of Baltimore, D. G. Finnerty of Boston, John F. Deedy of Worcester, Inspector of Plumbing J. G. Read of Pawtucket, J. R. Tully of Boston, and others.

THE PLUMBING AND TINNING FIRM of Behner & Norton of Hartford, Conn., says the *New Haven Record*, has been dissolved. The business will be continued by F. E. Behner at the old stand.

New Perfection Irrigating Pump.

The accompanying cuts represent an irrigating pump, put on the market by the St. Joseph Pump Company, St. Joseph, Mo. The device is shown in

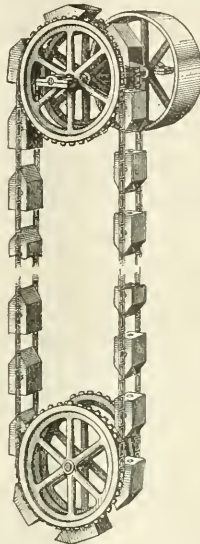


Fig. 1.—New Perfection Irrigating Pump.

Fig. 1, and an enlarged view of the bucket in Fig. 2, a portion being broken away to show the valve in the bottom. The bucket is made of galvanized iron, folded together by double locked seam, having a ball valve or air

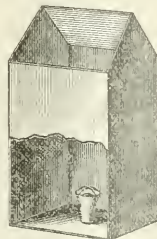


Fig. 2.—Enlarged View of Pump Bucket.

vacuum in the bottom to allow the air to escape as the cup fills with water, thus overcoming air resistance. As the cup passes over to empty, the valve or ball drops into a basket, which permits the air pressure to force the water, causing it to empty rapidly. It has been demonstrated, it is stated, that air resistance in a large volume of water is almost equal to the weight of the water itself, and the manufacturers

refer to the pump saving almost one-half in power and machinery. It is claimed that, practically speaking, with the pump all that has to be overcome in the way of resistance is the actual weight of water, and that this is a feature peculiar to this pump only. When a pump is ordered, it is furnished as represented in Fig. 1, including the top gearing, babbitted boxes, sprocket wheels and driving pulley keyed on to the shafting; also with the chain and buckets and lower sprocket idlers keyed in position. The frame for the machine to rest on is designed to be constructed by the purchaser, after the plan of a common grindstone frame, to suit the lay of the ground. When heights of lifts are not given the manufacturers' quotation is based on a 20 foot rise to the top of the ground. The company state that the pump is adapted to the use of farmers, gardeners, stock and fruit raisers, and that it can be driven by horse, steam, windmill or motor power. It is further stated that the pump can be used in raising water from wells, rivers or canals, that it is especially adapted to use where a large volume of water is required, and that it is made with a capacity of from 50 to 1500 gallons per minute.

A Model Plumbing Establishment.

The building 212 Bank street, New London, Conn., occupied by L. Mallory has come out of the hands of carpenters and painters and the change in its appearance has been remarkable. Two large plate glass windows have been placed in the front, giving ample window display. The interior is hard wood finished throughout and has been fitted up to make the finest kind of a showroom for exhibiting Richmond steam and hot water heaters, elegant bathtubs, lavatories, siphon closets, and all their working connections, showing also the fine plumbing the firm are capable of.

In one window is shown a porcelain bath and a lavatory of light Tennessee marble with all faucets, trimmings, &c., silver plated. The window floor is covered with tiling and rugs and the effect is decidedly pleasing. In the other are shown Richmond heaters in two styles, painted white with gilt decorations and various kinds of ornamented radiators.

In the center of the store is a row of Richmond heaters. One is set in Philadelphia pressed brick, with a section left open showing the arrangement of the flues. On the north side is a row of siphon closets of modern design, with connections all made, showing their action with water. Another bath, steel clad and copper lined, is here shown and also an elegant lavatory with beveled plate mirror.

On the south side is set up a Jewett steel range with all the auxiliaries in working operation. Here are seen the plumbing connections to the copper boiler, the porcelain lined sink on one side and the convenient wash trays on the other. In the rear in one corner is

the business office neatly partitioned off, and further in the rear is the workshop, arranged with all the necessary appliances for promptly and skillfully turning out work.

The store is specially fitted up as a showroom, and everything is arranged just as it would look ready for use in a private residence.

Association News.

The Missouri Plumbers' Convention.

The Missouri State Association of Master Plumbers held its annual convention last week in the Elks' Hall, Hagan Building, St. Louis.

President L. B. Cross called the meeting to order at 10 o'clock a.m., appointing L. Marvin, R. T. Connell and Phil Krusz as a Committee on Credentials. John McDonnell of Kansas City, Ed. Byrne of St. Joseph, and John McMahon of St. Louis were appointed as Auditing Committee, and T. T. Gray of Sedalia, Henry Goss of Kansas City, Harry Cooper of Springfield, and M. J. Ward of St. Louis as Committee on Resolutions. President Cross then addressed the meeting and congratulated the association on the good work already accomplished. The secretary reported 13 new members during the year, and the treasurer's report showed a balance of \$1044.50. Initiation fees for individual members were increased from \$2 to \$5, and from \$10 to \$20 for firms.

A new plumbing law was advocated which provides for the inspection of plumbing in cities of 5000 inhabitants and over, and the appointment of a Board of Examiners, to consist of the health officer of the city, two master plumbers and two journeymen who have had at least 15 years' experience. The matter will be taken before the Legislature by a committee appointed by the association. Another committee of two will be appointed to canvass the State for new members. The election for officers for the ensuing year resulted as follows: L. B. Cross, Kansas City, president; Joseph W. Powers, St. Joseph, vice-president; John P. Kelleher, St. Louis, secretary, and Henry Goss, Kansas City, treasurer. The officers, with the addition of M. J. Ward and Harry Cooper, will act as the Executive Committee. Ed. J. Lonergan of St. Louis and Joseph W. Powers of St. Joseph were selected as delegates to represent the Missouri division at the Convention of the National Association, to be held at Philadelphia, June 11, 12 and 13.

St. Joseph was chosen for the next annual meeting, and the time was changed from the second week of February to the second week of April. After a vote of thanks to the local organization and to the press, the meeting adjourned *sine die*. In the evening the visitors were entertained at a banquet given in their honor by the local plumbers, and songs, recitations and speeches were listened to during the repast, which continued until a late hour.

The Massachusetts State Association of Master Plumbers will hold its next quarterly meeting in New Bedford, Mass., the latter part of April, and at a recent meeting of the local Master Plumbers' Association the subject of the State association's meeting was considered.

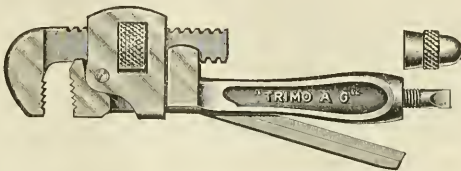
THE Wisconsin plumbers' organization have had a copy of the New York plumbing law introduced in the Wisconsin Legislature and P. H. Ryan and W. S. Patterson appeared before the legislative committee in behalf of its passage, clearly stating its points, and made a favorable impression in its favor on the committee.

JOHN HICKMAN, Paterson, N. J., State vice president of the National Association of Master Plumbers from New Jersey, was caught out in the recent blizzard and badly frozen. It is reported that he is recovering and is still able to make one of his effective speeches.

MASSACHUSETTS, MISSOURI AND CONNECTICUT PLUMBERS were honored at their State conventions. National President John Mitchell was at Waterbury, Conn., ex Presidents Daniel G. Finnerty and John Trainor were at Boston, Mass., and National Vice President L. B. Cross presided at St. Louis, Mo.

Trimo Gas Fitters' Wrench.

The Trimont Mfg. Company, Roxbury, Mass., are putting on the market a wrench for gas fitters' use, as shown



Trimo Gas Fitters' Wrench.

herewith. The wrench is 6 inches in length, and has a gas tip cleaner which shuts into the handle, as a knife blade. The cleaner is released for use by unscrewing the knurled cap at the end of the handle. By unscrewing the cap entirely a screw driver is disclosed. The tool is referred to as a handy pocket wrench, and is furnished both polished and nickel plated.

TRAPS AND VENTS.

R. L. DODSON, who was a member of the firm of Whitney, Dodson & Co., in Albuquerque, N. M., has opened a plumbing establishment himself.

THE BOARD OF PLUMBERS of Waterbury, N. Y., met last week and granted a certificate of competency to F. B. Wilson, who was credited with 97 points out of a possible 117. The following plumbers now hold certificates of registration: Hyde, Young & Hyde, A. Beffrey, McCrady & Sutton, Howard & Arthur, J. W. Spratt, Pfister & Morath, J. J. Hartigan, J. J. Braggar, M. Harbottle & Co., Huntington & Weeks, G. H. Mowe, A. J. Easton and L. A. Howard.

THE MATTER of plumbers taking out licenses and furnishing bonds was brought up by the City Council of La Porte, Ind. All plumbers are to be made to take out a license and furnish a bond for doing their work in accordance with the requirements of the city. There are said to be now practicing in the city several plumbers who have neither licenses nor have they furnished bonds.

"STEEL CLAD BATHS, TORONTO" appears in raised gilt letters on the front cover of a pretty pamphlet which

is issued by the Toronto Steel Clad Bath & Metal Company, Limited, Toronto, Ontario, Steel Clad Baths being made in Toronto, New York, Detroit and London. This is the third season of the concern, and in a prefatory note to the catalogue they refer to the constantly increasing sales of their specialty and the endorsements it has received from sanitary engineers and architects. Ten different full page plates show their various styles of the Steel Clad Baths, while sufficient descriptive particulars are given to enable the reader to form a very clear estimate of its features. Toward the close of the pamphlet cuts are shown of bath fixtures, range boilers, soap cups, pantry sinks, &c. At the end is a list of references and a number of testimonial letters.

THE City Council of Gloucester, Mass., is considering a plumbing ordinance.

J. C. DEGNAN, Middletown, N. Y., is exhibiting a shower bath of his invention in his window.

AT THE MEETING of the Board of Plumbing Commissioners, Jacksonville, Fla., last week, the report of Plumbing Inspector Moran for the eight months from May to December 31, 1894, was

received and shows that 442 plans have been submitted for his approval. Of these, 85 were for inspections in new buildings, 265 for the remodeling of plumbing in old buildings and 92 for sewer connections. There were 195 inspections of new plans and 590 of old plans made during the eight months, and \$639.50 was collected in fees. There were at the first of the year eight licensed plumbing establishments in the city, according to the inspector's report.

E. A. CREEVEY has purchased the entire business of the late M. R. Leavenworth, Bridgeport, Conn., who was engaged in the plumbing, heating and stove business for so many years.

THE MONTHLY MEETING and BANQUET of the Plumbers' Supply Association of New England was held at Young's Hotel, Boston, Mass., last week. Frank J. Knox presided.

F. & F. C. BOOTH, who succeeded a short time ago to the plumbing business of the late Alfred Hopkins on Middle street, Bridgeport, Conn., report a very satisfactory business going on at the present time. They are handling the Mahoney steam and hot water boilers.

PAT KANE's plumbing establishment at Alton, Ill., was entered by burglars last week.

AT THE ACADEMY OF MEDICINE, 17 West Forty third street, New York, last week, ex-School Commissioner Charles C. Wehrum read a paper on "How can the Sanitary Conditions of the Public Schools be Improved?" He said that it would require \$7,000,000 to put the public schools of the city in the condition they ought to be. The Board of

Education was represented by Assistant Superintendent of Schools Lee, who gave his opinion that it would take three times \$7,000,000 to put the schools in the sanitary condition they should be in.

F. A. CURTISS of Curtiss & Pierpont, plumbers, New Haven, Conn., has bought a lot and will build a residence in the spring.

THE PRELIMINARY REPORT of the sub Committee on Baths and Lavatories of the Committee of Seventy, of New York, has just been completed. The committee finds that New York and other American cities are far behind those of Europe in the matter of public baths. The public lavatories in this city are in the bar rooms and, with a few exceptions in the parks, are nowhere else. The committee describes at some length the system employed in London, especially the underground lavatories, &c. It recommends the duplication of the conveniences in the parks and the enlargement of those already built; ample provision of conveniences for women; the opening of a sufficient number of underground water closets near the greatest points of travel; the provision of a sufficient number of surface water closets, and the placing of lavatory accommodations as far as possible in public buildings. The committee further recommends that a part of each of the baths and conveniences be free and in the remaining part a small fee be charged; that the places be in charge of paid attendants, and they be under the jurisdiction of the Health Department.

CATALOGUE No. 1, dated 1895, and issued by the Pfau Mfg. Company, 133-142 Hunt street, Cincinnati, Ohio, shows a very extended line of Peacock tanks and seats, and likewise notes several other sanitary specialties. The firm have during the past year increased their manufacturing facilities, having added several new departments, including nickel plating, brass casting and finishing and stamping. The trademark which they have adopted for their goods is the representation of a peacock. Alluding to the tanks and seats the manufacturers say that they use dowels in each joint, thus insuring great strength and durability. The closets include the Objay and Epay, and the closet tanks in all styles and finishes are illustrated. Among the new goods are the Palm Scroll and the Grecian Border high grade tanks, which are decorated by sunken designs. The Roman pattern high grade seat and tank is a new fitted design of simple but elegant appearance. The Grecian Groove seat and tank are also new constructions, as is likewise the Royal. Other more elaborate designs are the hand carved seats and tanks. At the close of the catalogue illustrations of the different tanks showing their construction and operation are presented.

SMITH & WEBSTER, 15 to 21 North Clinton street, Chicago, have secured the entresol floor of the Unity Building, 81 Dearborn street, which is to be fitted up as a showroom for their plumbing specialties. It is an ideal location for this class of business.

THE PLANT now under erection by the Victor Mfg. Company, at Blairsville, Pa., is nearly completed. The new concern will make a full line of porcelain enamel baths and enameled sanitary ware, also enameled specialties of every description. Their plant will be a very complete one and will include pattern

shop and foundry. The concern received 5 acres of ground and a cash bonus from the citizens of Blairsville in consideration of their locating the plant at that place.

S. P. OLCOTT, formerly with C. W. Woodford, Port Henry, N. Y., and J. S. Huestis, formerly with F. E. Huestis & Brother, Crown Point, N. Y., have purchased the hardware, plumbing and tinning business of F. Jansen of Ponds, N. Y. Mr. Huestis is a practical plumber and heating engineer, being a graduate of the New York Trade School, while Mr. Olcott is a practical hardwareman who has been in the business for several years. The capital of the concern is \$9000.

THE ALBERENE STONE COMPANY, 219 Lake street, Chicago, are to place a number of their laundry tubs in the Marine Hospital, Lake View.

Proper Location for Gas Meters.

The following extracts are from a paper read by Samuel Abbott, Jr., at the convention of the National Association of Fire Engineers at Montreal:

Experience has demonstrated the fact that the maximum degree of heat from a fire first occurs at the highest point in a room (except in the immediate location of a fire). Such being the case, it would be necessary to so locate the meter as to insure a minimum degree of heat for a reasonable time, thereby allowing for the discovery of the fire and notification of the fire extinguishing forces before the heat had arrived at such temperature as to melt the lead connections to the supply and distributing pipes or the soldering used in the construction of the meter. Very few fires originate in the immediate vicinity of a window of a building. Those that do are discovered early and invariably easily extinguished.

Taking the above experience into consideration, the undersigned respectfully recommend that the proper location for gas meters in buildings, especially those used for manufacturing or storage purposes, should be at a point where the liabilities of the degree of heat in case of a fire should be at the minimum (which is usually near the floor of a room).

The connections between the supply and distributing pipes of the meter should be of iron, the meters where the soldered joints come to be inclosed in a sheet or galvanized iron hood sufficiently large to allow an air space. The hood would prevent interference with the meter and protect it from the direct heat of the flames.

New buildings should be piped in such a manner as to bring the main supply pipe directly perpendicular from where it enters the building and within easy reach of a window, the piping in the various stories diverging from the main pipe; where more than one meter is used, its location should be as previously recommended.

A shut off cock should be located in the supply pipe, either in the sidewalk or within accessible distance from the cellar window, the glass of which should be of such color as would make it distinctive and noticeable.

The subject of this topic not only is an important factor in a fire in its incipient stages, but is responsible for causing what would otherwise be incipient fires, conflagrations, and also many fires causing the use of large quantities of water that otherwise could

be avoided. Often has it been the experience of many of us, where the lead connections of the supply and distributing pipes to the meter, or the pipe itself, becomes melted or disconnected, thereby allowing a fierce flow of gas flame, that invariably cannot be overcome except by the shutting off of the gas.

A Woman Plumber.

Woman! woman! that delightful creature so indispensable to man and equal to all of the emergencies made by his weaknesses, has shown that even the mysteries of the plumber's art can be included in her sphere and successfully solved when she goes to work.

In describing her experience, she said: "When sister came down to breakfast she said the water would not run out of the bathtub. I had to go out that day, and in my absence more water was run into the tub with the hope that the increased quantity would force itself out. Father had been consulted, but he had looked at it and said he didn't know what to do, and the water was still in the tub. I told my sister to send for a plumber, for I had another engagement the next day, but she was busy, and as the water had gone a sixteenth of a yard she thought it would all go in time. The next morning I concluded I would know how the 'rutlis were put on' that plumbing system, so I dressed for the work and took up the study of it. I took up the carpet, for I knew there must be some way to get at the pipes, and I found a board that was screwed down. I thought that was unusual, as all of the other boards were nailed, so I took it up to see what was under it. I got a screwdriver and took up the board and found that two other boards came up with it, leaving quite a good sized hole, as I could see under the bathtub. There I saw a short pipe coming down into a sort of a swelling and then running off somewhere, for I could not see the end. I felt all around the pipe and found a little cap with two prongs on it that I pried against with the screwdriver and it came loose so I could unscrew it. The smell almost made me sick, but I fished in there with a stick and got out a horribly nasty mess of lint, string and soap that nearly made me faint. I stuck to it, though, and pretty soon the water came with a rush, and I had to sit near that disagreeable mass with my hand over the hole till all the water ran off. Then I found the inside washed out quite clean, so I screwed on the little cap, got rid of the filthy stuff and put down the board and carpet without half as much fuss as a man would have made, and left everything perfectly clean and in good order. When the folks asked me how I knew how to go about it I told them that *The Metal Worker* did not lay about where I could see it for nothing."

The officials of the New York and New Jersey Bridge Company state that work on the general specifications and plans for the suspension bridge over the Hudson River are nearly completed, and that as soon as they are finished proposals will be advertised for. The wire for the cable will have to be capable of sustaining not less than 180,000 pounds to the square inch.

The paper box trust of the United States is at an end, through the defection from its ranks of one of the largest manufacturers.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

ADDITIONS are being made to the school building at New Britain, Conn., for which the Fuller & Warren system of heating and ventilation has been adopted.

DANIEL W. BURNS, 4681 Lake avenue, Chicago, is to do the plumbing and drainage work in the flat building of B. O. Gronast, 13 Anna avenue.

FRANK J. RUH, 1204 Diversey street, Chicago, has the contract for the plumbing and drainage in the flat building of E. Haegele, Lincoln avenue and Diversey street.

JAMES J. DOYLE, 6040 South Halsted street, Chicago, has the contract for the plumbing in the flat building of James Owens, Green street, between Sixteenth and Sixty-first.

ROBERT R. HEANTSCH, 5631 Wentworth avenue, Chicago, has the contract for the plumbing and sewerage in the residence of John Dacy, Honore street, near Thirty-third.

ISAAC LEVY, 535 South Halsted street, Chicago, is to do the plumbing in the building of Julius Neiss, Wabash avenue, near Congress street.

JOHN SANDERS, 711 Thirty-third street, Chicago, has the contract for the plumbing and sewerage in the two residences of Levi Pritchard, 5633 5640 Sherman street.

MORRIS BROS., 2442 South Halsted street, Chicago, are to furnish the plumbing and drainage for the building of Robert H. O. Marks, 5113, Aberdeen street.

THE plumbing and steam heating contracts for the new house of Dr. F. W. Calkins, New London, Conn., have not been let.

BIDS for the supplies for the water department of Worcester, Mass., were awarded last week. The contract for cast iron pipes and branches was awarded to the Warren Foundry Company of Phillipsburg, N. J., for \$18 a ton net for pipe and \$35 a ton for special castings. The contract for lead pipe and pig lead was awarded to the Boston Lead Mfg. Company of Boston for the reason that their bid included delivery to any part of the city. The bids in this line were very close. The company above noted quoted 4½ cents a pound for lead pipe and 3½ cents for pig lead, delivered. The contract for iron castings was awarded to Presby Pero of Worcester for 1½ cents a pound for new castings, Mr. Pero agreeing to pay 40 cents a hundred pounds for the old castings.

THE SPERL HEATER COMPANY, Carbondale, Pa., have been awarded the contract for heating by the hot water system the new Burke block on Sixth avenue; it will take one of their largest heaters to do this work.

GREEN & LOGAN, Bridgeport, Conn., are now finishing the plumbing and heating of S. Beardsley's house and D. E. McNamara's block, and have put in furnaces for D. A. Wood, J. Wilcoxson, Mrs. C. C. Sealey, F. Wheeler, C. Bradley and William Coulter, all in Stratford.

A SEVEN ROOM COTTAGE HOUSE is to be built in Stratford, Conn., by F. D. Robertson. There will be a tank in the attic, and the house will have modern

plumbing conveniences and furnace heat.

THE BUILDING COMMITTEE of the West Hartford School, Hartford, Conn., are now deciding on the heating system to be adopted, and it is expected that Architect Becker will have the plans out for the building ready for figures within a short time.

E. S. BURNHAM, Hartford, Conn., is to build a \$15,000 residence that will be heated by hot water.

ASHTON & GARRITY, Waterbury, Conn., have secured the contract for the plumbing, steam and gas fitting in the new Conlan Block. A McCormack boiler will be used with the H. B. Smith Company radiators and Peck Bros. and Sanitas fixtures will be used in the plumbing. They also have the plumbing of the Delaney & Condon Block, and are putting two Page boilers in Dr. Rodman's house.

L. P. WALDO MARVIN, Hartford, Conn., is to erect a brick residence to be heated by hot water and having sanitary plumbing, fire places, mantels, tiling, &c.

THE EXETER MACHINE WORKS, 82 Oliver street, Boston, Mass., are furnishing the radiators for R. H. White Company's new building in Boston, Buerkel & Co. having the heating contract.

A. V. FETTER, La Crosse, Wis., has secured the contract to put in the plumbing and heating apparatus for the new hotel at Medford, Wis., at \$2500.

SEALED PROPOSALS will be received at the office of the Custodian of the United States Court House and Post Office Building at Jefferson City, Mo., until March 6 for certain plumbing and miscellaneous repairs upon the building.

GEO. L. ROOD, 79 Lake street, Chicago, has the contract for warm air heating in the three residences of C. A. Baker, Euclid avenue.

FREDERICK J. KENDRICH, 3634 State street, Chicago, has the contract for the plumbing and drainage in the flat building of C. A. Lundelius, 1071-1073 Fifty-sixth street.

NOBLE & THUMM, 290 Lincoln avenue, Chicago, are to do the plumbing and drainage in the building of H. L. Wheatley, 1965-1971 North Commercial street.

WILLIAM S. VERITY, 229 West Randolph street, Chicago, is to do the plumbing and drainage in the cottage of Samuel Brown, 137 Cosgrove avenue, and in two residences at 1210 and 2414 Potwine place.

BECKER & SCHIRRA, 643 Sedgwick street, Chicago, have the contract for the plumbing and sewerage in the flat building of W. Henning, 1527 and 1529 Grace avenue.

FOSKETT & BROWN, 186 Van Buren street, Chicago, are to do the plumbing in the store building of F. M. Woods, 1278-1280 Washington boulevard.

THE J. W. BROWN PLUMBING COMPANY, 364 Lincoln avenue, Chicago, are to do the plumbing and drainage work in the flat building of J. A. Bengard, 1042 Diversey avenue.

JAMES WELCH, 524 Ogden avenue, Chicago, has the plumbing and drainage work in the school building of Rev. G. Hauser, 843 West Taylor street.

THE CHARLES H. SIMMONS COMPANY, 72 Market street, Chicago, are to install

a steam heating plant in the store building of Heywood & Morrill, 272 Wabash avenue.

R. & J. KNIGHT, 896 Thirty-first street, Chicago, have the contract for the plumbing and drainage in the flat building of Henry J. Rohrbach, 3622 Wentworth avenue.

D. F. DEWAR & Co., 335 Sixty-third street, Chicago, have the contract for the plumbing and drainage in the residence of S. Kohn, Vernon Park avenue and Seventy-second street.

WILLIAM SIMS' SONS, 543 West Madison street, Chicago, have the contract for the plumbing and sewerage in the flat building of R. R. Thomas, 234 South Francisco street.

G. M. HAWTREE & Co., 6822 South Halsted street, Chicago, are to do the plumbing and sewerage in the flat building of Mrs. C. Squires, 517-519 Sixty-fifth street.

WM. C. BLETSCH, 1216 Belmont avenue, Chicago, has the contract for the plumbing and drainage in the flat building of Charles E. Matson, 1185 Sheffield avenue.

BYRNE & RYAN, 254 Forty-third street, Chicago, are to do the plumbing and drainage in the flat building of Joseph Duplex, Champlain avenue and Sixty-fourth street.

THE UNION FURNACE COMPANY, 65 Dearborn avenue, Chicago, are finishing the steam heating work in the Kersage Building, 2954-2956 Cottage Grove avenue.

EDWARD B. SILVERY has secured the contract for the plumbing and heating in John Look's new house on New York avenue, Cottage City, Mass., and a Victor boiler is to be installed.

The report of the Chief of the Treasury Bureau of Statistics for January shows the exports of merchandise to foreign countries from the United States to have been \$91,932,000 in value during the month, against \$85,909,200 in January, 1894. For the seven months ending January 31, the decrease in exports as compared with the first seven months of the last fiscal year was \$71,500,000. In January last the exports exceeded the imports by \$13,793,746. In January, 1894, the excess of exports over imports was \$33,987,549. During the seven months ended January, 1895, the excess of exports over imports was \$04,009,612, and the excess for the corresponding period of the preceding year was \$206,249,642.

A very decided improvement has taken place in the New York real estate market, and the outlook for the spring months is regarded as being exceptionally bright. Private sales amounting to over \$3,000,000 in city realty were closed last week, and brokers report a heavy volume of investment orders in hand.

Representatives of some of the largest sewing machine companies in the United States were in conference at Cleveland, Ohio, last week, with the view, it is said, of consolidating their interests. The capital stock of the new combine is placed at \$20,000,000, a large portion of which is likely to be taken by English capitalists. The Singer factories in the United States, Canada and Scotland are to be included.

STEAM AND HOT WATER.

Master Steam Fitters.

A joint conference of the Executive Committee and Advisory Council of the Master Steam and Hot Water Fitters' Association of the United States was held at their headquarters in the Cable Building, New York, on February 15. James Curran was elected a member of the Executive Committee to serve the unexpired term of Frank Williams, who will continue his labors in the interest of the association as State vice-president for New York. The subject of entertainment at the national conventions was discussed, and in future less of the time of the delegates will be devoted to accepting hospitalities than has been the custom in the past. No provision will be made for the exhibition of goods at the next convention, though those who represent the manufacturers will be welcome guests of the association. The advisability of holding the convention at Philadelphia is being discussed, and if favorably decided it is probable that the date, which has not been fixed, will be the 13th, 14th and 15th of June. This is the same week that the National Association of Master Plumbers hold their convention, the date of the latter being the 11th, 12th and 13th of June. Should the same city and the same week be decided upon by the steam fitters it will be greeted with pleasure by many who have in the past regretted the impossibility of attending both conventions. The two associations are to be congratulated on the harmony that makes this possible and probable.

The U. S. Boiler.

The accompanying illustration shows very clearly the constructive features of the U. S. boiler, made by the U. S. Boiler Company, Titusville, Pa., and which is intended for either steam or hot water. In placing this boiler on the market the manufacturers had in view an apparatus that could be built up by the agents handling it, so they would not be compelled to have a number of boilers in stock to supply the requirements of their trade. The boiler, it will be noticed by referring to the illustration, is composed of a number of sections, placed one over the other, as many rows of sections being used as are necessary to give the required amount of surface for any particular job. The only parts to be provided for are the water leg and dome, the grates and all other parts being such that they can be used in any way required.

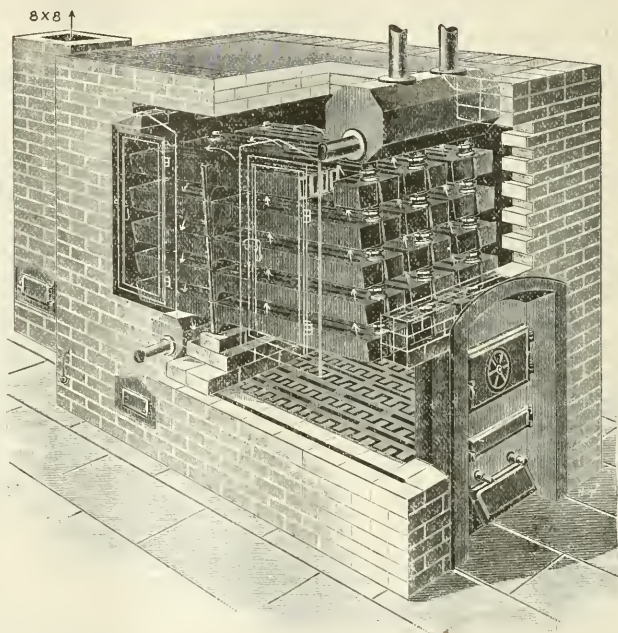
The surface of this boiler is over the fire and the heated gases in their upward motion strike the surface at right angles. When they get as high as

possible they take a downward course to the flue which is at the lowest point under the water leg. On their upward travel the gases impinge on two-thirds of the heating surface, the downward travel covering the remaining one-third, and the gases leave the boiler at the point where the return water enters. The manufacturers allude particularly to the means by which the gases are held in the boiler until the greatest possible amount of heat is abstracted from them, the gases leaving where the water is coolest—that is, at the point of return to the boiler. It will be noticed the boiler is brick set, which is a system

Introducing Heating Systems.

BY LISTENER.

A dealer in heating apparatus has pursued a course, with a view to extending his business, that may be followed by others throughout the country with advantage. At this season of the year, when houses are well or poorly heated, the public are more likely to be interested in new methods of heating than later in the year, and with this for an incentive he has prepared a series of



The U. S. Boiler with Casing Broken Away.

of construction that the manufacturers prefer, the points being made that it reduces the shipping weight of the boiler and that brick setting is more substantial, making the boiler run more evenly and is in the end most economical. The firm sell direct to the trade, and as the boiler can be made up in various sizes, the surface can be worked out with the same care as the radiating surface of the building. The connections are screwed, there being no bolts or packed joints. Each section contains 12½ feet of surface and the boilers can be built up to any size.

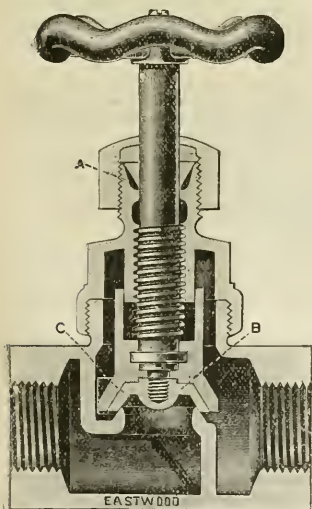
PHOTOGRAPHS of the indirect radiator of the Niagara Radiator Company, Buffalo, N. Y., are being shown to the trade by Walter Pendleton of the New York office, 89 Centre street.

articles on the use of both steam and hot water for house heating that are appearing in his local paper. It is claimed by good engineers that for some special buildings either steam or hot water is better adapted for securing a comfortable temperature throughout than some other means of heating. While this may be unquestionably true, many citizens are not only not aware of the truth, but in all probability would be slow to accept it on its presentation. If such a citizen was in need of heating apparatus and was approached by a dealer in either steam or hot water apparatus, the probabilities of a sale would be very slight. No little time

would be required to educate the prospective purchaser so that the value of either of these systems would be apparent to him. If, however, he had read in his local paper a series of articles giving the facts simply and comprehensively, without bias, about the different methods of heating and the manner in which they should be installed, the local heating man who furnished them would be silently strengthening his prospects for future trade. It is more than probable that the field of steam and hot water heating could be very materially enlarged if in a plain, sensible way the peculiarities of each were fully explained, where the average householder could digest them at his leisure and with no feeling of constraint to buy. There is yet in the minds of the people an idea that there is more or less danger of an explosion from a steam boiler for house heating purposes, and that a hot water heating system, though not so dangerous, is likely to leak and flood rooms, and while the people remain unfamiliar with these systems the work of education that is before both the dealer and the salesman of such apparatus will be arduous. Articles explaining away these notions would be interesting, and there should be no difficulty in securing their insertion in the local papers.

The Eastwood Valve.

The illustration herewith shows a sectional view of the Eastwood valve, for which patents were granted H. R. Fris-



The Eastwood Valve.—Sectional View.

ble December 4, 1894, and which are controlled by the manufacturers, the Eastwood Wire Mfg. Company, Belleville, N. J., and 39 Dey street, New York. The valve is made of perfection bronze, and it is claimed that the workmanship in every detail is of the highest possible grade, as the valve is manufactured specially to withstand the

highest pressures. All parts are interchangeable, the principal feature being the copper disk which makes the face of the valve and the conical seat upon which it rests. This copper disk is struck up under a 500 pound drop hammer and is firmly fastened into the sleeve which secures the valve spindle by a screw held in place by the valve spindle. By this means it is impossible for the disk to blow out under a high pressure and to find its entrance into the steam pipe and choke it. The sleeve around the valve spindle gives additional strength to withstand the high pressure under which it is said that the valve can be used without disadvantage. Referring to the engraving, B designates the disk holding screw and shows the method by which the screw is locked which holds the disk to the sleeve, while C shows the disk. A is one of four flutings which is placed in a recessed cavity at the top of the valve for packing. The object of the fluting is to prevent the packing from turning with the valve spindle and bringing a pressure against the valve cap. It is pointed out that the method of making the seat joint is entirely new, as the flustum of the cone against which the struck up copper removable disk fits permits any sediment to be washed from the surface previous to the disk setting down on it and thus always insuring a tight joint. One of the tests to which this valve has been subjected was the screwing into one side of the valve of a 16-foot pipe which was filled with sand and connected with a live steam pipe. Then steam at 80 pounds pressure was turned on and all the sand in the pipe was forced through the valve, and after steam had commenced to issue the valve was closed and no difficulty was found in securing an absolutely tight joint. On removing the valve for examination its seat was found to be perfect. The valves have also been successfully tested on a number of digester plants where the steam pressure has been above 120 pounds as well as on the tops of digesters where a pressure of 80 pounds of sulphurous acid gas existed, and after months of wear they still prevent leakage. The valves are made as horizontal, angle and cross valves in all sizes from $\frac{1}{4}$ up to 3 inches. They are made with iron body and composition mounted, in all sizes from $\frac{1}{4}$ to 14 inches, and it is stated that larger sizes will be furnished if desired. Price lists and descriptive circulars can be had by writing for them.

CHICAGO CAPITALISTS are negotiating with H. T. Yaryan of Toledo, Ohio, for an interest in his central station hot water heating system, with a view to introducing it in some of the Chicago residence suburbs. The heating plant that he has in operation in Toledo heats about 25 residences by means of hot water, which is pumped through underground mains to the residences. In each house is a coil of pipes located in the basement. Through this coil of hot pipes cold air is forced by means of a flue taking air through an opening in the foundation walls. This is distributed through the house in the same manner as hot air from a furnace. The water used in the system is taken from the city water works in a large tank holding several hundred barrels, from which it is drawn into two upright heating cylinders about 5 feet long and 20 inches in diameter, where it is heated to a temperature of 180° by steam from a large boiler. By means of two pumps it is then distributed to the residences,

in all through about 2 miles of pipe, and returned to the heating cylinders, where, having lost about from 20° to 30° of heat, it is used over again and kept in constant circulation. The boiler from which the steam is taken also furnishes the power for the operation of an electric lighting plant supplying light for about 33 residences in the neighborhood.

Uniform Contract.

In accordance with instructions of the sixth annual convention, Master Steam and Hot Water Fitters' Association of the United States, the Committee on Uniform Contract have submitted the following report and contract:

To the Master Steam Fitters and Heating Engineers of the United States:

We present for your consideration a Uniform Contract, being a digest of the opinions received at this office, grouped in a short form, and with the fewest possible blanks.

The words in italics are to show the proper filling out of the contract, and in the printed forms would be blank, as shown by dotted lines.

This Contract aims to cover items which have been found to operate to the disadvantage of our members, namely:

FIRST. That the apparatus shall be paid for when finished; the contractor, at the same time, holding himself responsible to maintain his guarantee at any time called upon. It is hoped this will avoid a retention of money for an unlimited period without recompense to the contractor, being in every case considerable loss.

SECOND. Relating to extra work. In this Contract it is put on the basis of being paid for at or near the time done, instead of being retained until final certificate is issued.

There having been a difference of opinion as to terms of payment, your attention is directed to Alternate Clause for Article VI.

Your attention is also directed to the clause providing for arbitrating disputes as to the true meaning of plans and specifications. It will be of great advantage if this or a similar plan can be carried out.

COMMITTEE ON UNIFORM CONTRACT.

Uniform Contract for the Construction of Heating Apparatus (to Be Adopted for Use by the Master Steam and Hot Water Fitters' Association of the United States.

(Copyright, 1895, by the Master Steam and Hot Water Fitters' Association of the United States.)

THIS AGREEMENT, made and concluded at Kalamazoo, State of Michigan, the first day of January in the year one thousand eight hundred and ninety-five, by and between Jones & Brown, of Chicago, State of Illinois, for themselves and their legal representatives, parties of the first part (hereinafter designated the Contractor), and R. I. Peters, of Kalamazoo, State of Michigan, for himself and his legal representatives, party of the second part (hereinafter designated the Owner).

WITNESSETH, That the Contractor, in consideration of the fulfillment of the agreements herein made by the Owner, agrees with the said Owner as follows:

ARTICLE I. The Contractor, for the consideration hereinafter provided, covenants and agrees with the Owner that the Contractor shall and will, within the space of three months next after the date hereof, in a good and workmanlike manner, and at his own proper charge and expense, well and substantially build, furnish and erect a certain Steam Heating Apparatus, at

444 4th Avenue, City of Kalamazoo, according to the Specifications, Drawings and Plans designed by Thomas Robinson, Architect, which Specifications, Drawings and Plans are made a part of this Contract and are identified by the signatures of the parties hereto.

ARTICLE II. No alterations shall be made in the work shown or described by the Drawings and Specifications, except upon a written order of the Architects, and when so made the value of the work added or omitted shall be computed by the Architects, and the amount so ascertained shall be added to or deducted from the contract price. In the case of any dissent from such award by either party hereto, the valuation of the work added or omitted shall be referred to three (3) disinterested arbitrators, one to be appointed by each of the parties to this Contract, and the third by the two thus chosen; the decision of any two of whom shall be final and binding, and each of the parties hereto shall pay one-half of the expenses of such reference.

ARTICLE III. Should any difference arise in interpreting the Plans or Specifications, involving or assuming additional compensation, the Contractor shall, upon written notice from the Owner, immediately execute such work, and the question of compensation to be determined on completion by arbitrators, as provided in Article II.

ARTICLE IV. All the materials and workmanship of the apparatus to be of the quality as expressed in said Specifications, Drawings and Plans; said Owner to reserve the right to reject, through himself or his authorized agent, all material or workmanship of an inferior quality, which said Contractor may attempt to use in the erection of said Heating Apparatus, and if the said Contractor, after being notified, neglects or refuses to do the work, or furnish the materials as called for in the Specifications, Drawings and Plans, then, and in that case, said Owner shall give notice in writing to the Contractor, which notice is to set forth in full the cause or causes of complaint. If the Contractor demurs and refuses to do the work or furnish the materials as directed in the notice of complaint, within three days from date of said notice, resort to arbitration shall be had as provided in Article II.

ARTICLE V. The Owner shall not, in any manner, be answerable for that shall or may happen to the said works, or any parts thereof respectively, or for any of the materials or other things used and employed in finishing and completing the same, loss or damage by fire excepted. The Contractor shall be responsible for all damage to the building and adjoining premises, and to individuals, caused by himself or his employees in the course of their employment.

ARTICLE VI. It is hereby mutually agreed between the parties hereto, that the sum to be paid by the Owner to the Contractor for said work and materials shall be Seven Thousand Dollars (\$7,000 00), subject to additions and deductions as hereinbefore provided, and that such sum shall be paid in current funds by the Owner to the Contractor, in monthly payments to the amount of 90 per cent. of the value of materials delivered to and labor performed in the said building during the preceding month, and the remaining 10 per cent. shall be paid as a final payment within 30 days after the contract is fulfilled.

All payments shall be made upon written certificates of the Architects to the effect that such payments have become due.

ARTICLE VII. It is mutually agreed that payments for all additional work shall be made at the same time and in the same manner as contract payments, Article VI.

ARTICLE VIII. It is mutually agreed that should default be made in any of the payments as herein provided, the Contractor shall have the right to stop work and withdraw all unused materials until such payment is properly made, or may at his option cancel the contract.

ARTICLE IX. It is further mutually agreed that the essence of this Agreement is that the Owner purchasing this apparatus and paying therefor will receive full value to the extent that it will warm the subdivisions of the building indicated on the plans to 70 degrees Fahrenheit in the coldest weather; but nothing herein contained, or in the Specification accompanying the same, shall prevent the Contractor from receiving from the Owner a final payment for the work herein and at the time stipulated.

ARTICLE X. The Contractor guarantees his workmanship and materials, the capacity of the boiler, the circulation of the system and the efficiency of the heating surfaces, all as called for in the Specifications hereto attached, and should any defects or deficiencies occur, other than from neglect on the part of the Owner or his employees, within the term of one year from the above date, the Contractor agrees to make good the same upon a written notice from the Owner at the Contractor's expense.

ARTICLE XI. If at any time there shall be evidence of any lien or claim for which, if established, the Owner of the said premises might become liable, and which is chargeable to the Contractor, the Owner shall have the right to retain out of any payment then due, or thereafter to become due, an amount sufficient to completely indemnify himself against such lien or claim. Should there prove to be any such claim after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging any lien on said premises made obligatory in consequence of the Contractor's default.

ARTICLE XII. It is further mutually agreed, between the parties hereto, that no certificate given or payment made under this Contract, except the final certificate or final payment, shall be conclusive evidence of the performance of this Contract, either wholly or in part, and that no partial payment shall be construed to be an acceptance of defective work or improper materials.

ARTICLE XIII. The said parties for themselves, their heirs, executors, administrators and assigns, do hereby agree to the full performance of the covenants herein contained.

IN WITNESS WHEREOF, the parties to these presents have hereunto set their hands and seals, the day and year first above written.

In presence of

J. R. Saxe

Jones & Brown (SEAL.)

R. J. Peters (SEAL.)

(SEAL.)

(SEAL.)

ALTERNATE FOR ARTICLE VI.

It is hereby mutually agreed, between the parties hereto, that the sum to be paid by the Owner to the Contractor for said work and materials shall be Seven Thousand Dollars (\$ 7,000) subject to additions and deductions as hereinbefore provided, and that such sum shall be paid in current funds by the Owner to the Contractor in installments, as follows:

When The Boilers are delivered and set,
\$ 1,500 00

When Steam Mains and Risers are in place,
\$ 1,500 00

When The Radiators are delivered,
\$ 1,500 00

When The Radiators are connected,
\$ 1,500 00

And the balance of \$ 1,000 00 as a final payment to be made within 30 days after this contract is fulfilled.

All payments shall be made upon written certificates of the Architects to the effect that such payments have become due.

HEATING NOTES.

THE STEAM FITTER sees the Standard radiators at their best as displayed at 206 Centre street by John I. Leitch, manager of the New York house of the Standard Radiator Company, Buffalo, N. Y. A rich Brussels carpet covers the floor and the different heights of the 2, 3 and 4 column Standard radiators show with fine effect in the varied styles of decoration as arranged at one side of the showroom. Radiators of the 3 column pattern occupy the show

window, and Standard indirect radiators are displayed at the entrance. On the other side of the showroom direct-indirect radiators are shown, and on a book stand circulars of the goods are conspicuously placed, while the trade papers are convenient for use by the visiting dealer. At the back of the showroom is the desk of Mr. Leitch, and in the wareroom beyond, which fronts on another street, a large line of radiators are carried in stock.

AT A MEETING of the creditors of the Pawtucket Steam & Gas Pipe Company held at Pawtucket, R. I., a report was presented in which was the following proposition: That the firm would pay 30 per cent. of their liabilities in cash within 30 days and 25 per cent. of their liabilities in 5 payments of 5 per cent. each, in 6, 9, 12, 15 and 18 months respectively. This proposition was unanimously accepted. Creditors or their representatives were present to the amount of \$50,000.

THE HAMPSON FLEXIBLE STEAM JOINT COMPANY has been organized at Lakeport, N. H., with a capital of \$25,000. The following are the officers: President, John S. Crane; vice president, W. H. Hampson; treasurer, B. F. Drake; secretary, M. F. Crane; directors, J. S. Crane, B. F. Drake, H. S. Young, W. H. Hampson, F. A. Barbey, H. E. Webster, A. J. Lane.

W. A. RUSSELL, the New York representative of the Detroit Lubricator Company, Detroit, Mich., spent the first of the week in Philadelphia and secured a contract for 5000 valves from a heating contractor.

THE UNITED STATES RADIATOR COMPANY, Saltburg, Pa., are using a new lithograph letter head which shows their Ornate radiator at one side, with the word "Ornate" in a diamond with the words "trade mark" under it in the center, and at the other side over the company's name is an eagle with spread wings and an American flag in each claw.

SECRETARY J. E. HOLLAND of the Holland Radiator Company, Chicago, is in New York for a few days talking radiators to the trade.

THE LYMAN WATER CIRCULATING & HEATING COMPANY have been incorporated at Chicago by Thomas Lyman, John S. Williams and William F. Storms.

THE AMERICAN BOILER COMPANY, 84 Lake street, Chicago, are now prepared to supply pipe and steam fittings from their warehouse, 46-48 South Canal street.

THE JOHN DOUGLAS COMPANY are to remove their Chicago office and showroom from Room 511, 34 Clark street, to more commodious quarters at 131 Lake street.

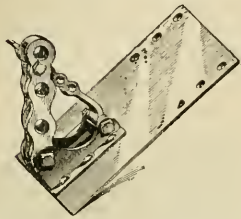
The safety of the Atchison bridge over the Missouri River at Atchison is said to be greatly endangered by the encroachment of the river. A canal is being dug to partially divert the stream through the island above the city. The canal will be over 1 mile in length and about 70 feet wide, its construction involving the removal of 167,000 cubic yards of material.

The Elgin National Watch Company and the Waltham Watch Company are to be consolidated and pass into the possession of a British syndicate. The valuation of the two properties is \$16,000,000.

ROOFING AND CORNICE.

The Baird Snow Guard.

E. J. Johnson & Co., well-known dealers in roofing slate, of 38 Park Row, New York City, are the sole agents for the Baird Snow Guard, illustrations of which are presented herewith. The guard is the invention of John Baird, a practical roofer of thirty years' experi-



The Baird Snow Guard.—Fig. 1.—General View of the Device.

ence, who has long realized the need of a guard that would fully meet the wants of the trade. For some time he has been engaged in working out his ideas, resulting in the guard here shown. The device consists of an iron plate, in size corresponding to that of roofing slate, and provided with an upright

mingham, Ala., are sending out by way of advertisement a reply postal card, on one of which they tell of their business and on the reply sheet is a blank, making it easy to order roofing and siding of different sorts.

FLASHINGS.

THE PLUME & ATWOOD MFG. COMPANY, Waterbury, Conn., are about to build an extension 200 feet long to their main building. The building will be partly two and partly three stories in height, of mill construction, with iron beams, gravel roof, metal skylights, &c.

J. J. COLVIN, 159 La Salle street, Chicago, is to do the galvanized iron work and slate roofing for the four-flat building of R. Stokes, Rockwell street, near North avenue.

H. J. LAWSON is to make very important additions to his metal works upon Lowell street, Manchester, N. H. Electric power has been introduced, and the power house is not only very convenient but is also a handsome sample of metal work, well worthy of inspection. Machines have been added for the spinning of copper, brass and zinc work. A neat and convenient forge room occupies one corner of the shop. Ponderous machines for the crimping and cutting of metal, and

City, where he has used some 20 tons of galvanized iron and about 10 tons of 16-ounce cold rolled and soft copper, with imported Holland tile. The work amounts to about \$16,000. He is also doing the bay windows and copper cornice for Patrick Byrne's new handsome residence in the same city, 15-ounce cold rolled copper being used.

B. M. SCHELLMANN, manufacturer of cornices and skylights, has removed to more spacious quarters at 190 Wooster street, New York City, his former place of business, where he had been for 25 years, having been torn down to make room for new buildings.

THE YOUNGSTOWN IRON & STEEL ROOFING COMPANY, Youngstown, Ohio, have appointed the Andrews Bros. Company, John McLaughlan, manager, 808 New York Life Building, Chicago, as their general Western agent, and ask the trade to correspond with them when in the market for anything in their line.

Sheet zinc, the British consul at Higo reports, finds a large and increasing demand in Japan, being indispensable as lining for cases containing matches for export. An advance in the price of this material has lately occurred in that country.

The British consul at Berne, Switzerland, reports to his government that the exports of aluminum from Switzerland increase steadily. Last year they were about \$100,000 more in value than in the preceding year.

It is reported by the *British Trade Journal* that the Continental Zinc Syndicate for the regulation of the European mines of the metal is in danger of being disrupted. Negotiations for the renewal of the convention are still going on, but the difficulties in the way are said to be such that an agreement seems most unlikely.

Probably the largest single order for aluminum ever given is that of the French Minister of Marine. It is for 92,500 pounds of the metal, to be used in the construction of steam launches for the navy.

The dire effects of the flood at Williamsport, Pa., last year are reflected in the annual statement of the lumber operations from that point for 1894. The shipments are shown to have aggregated 196,185,000 feet, a decrease of 78,150,000 feet from the figures for 1893. The flood swept away 140,000,000 feet of logs from the booms, as well as much manufactured lumber from the yards, only a portion of which was recovered.

Immigration to the United States in January amounted to 8784 persons, against 9308 arrivals in January, 1894. It is still considerably below the average for many years.

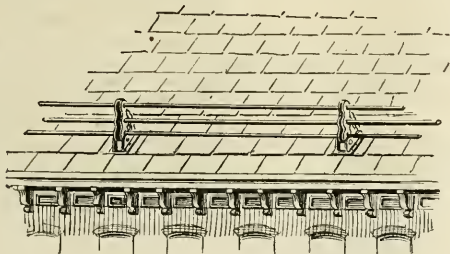


Fig. 2.—Appearance of Guard when in Position.

support for the series of rods or pipes to hold back the snow. The upright support is adjustable so that it may be set for any pitch of roof. It is fastened at the bottom with a $\frac{1}{2}$ -inch bolt, and at its upper end to a supporting rod containing five holes, thus allowing it to be adjusted to any desired angle. A view of the guard, showing the manner in which it is constructed, is shown in Fig. 1 of the engravings. The guard is made of malleable and wrought iron galvanized, particular care being taken that its strength shall be sufficient to withstand any strain to which it is likely to be subjected. In Fig. 2 of the illustrations is shown a section of the roof of a building, clearly indicating the appearance of the snow guard when in position. Price lists of this snow guard will be furnished on application to Johnson & Co.

THE EAST BIRMINGHAM IRON ROOFING & CORRUGATING COMPANY, Bir-

smaller ones for the shaping, burnishing and the other details of the architectural sheet metal work give Mr. Lawson the equipment for successfully competing for work all over New England.

JAMES J. WHITE, 185 Dearborn street, Chicago, has the contract for the copper cornices and 70 squares of tin roofing for the Duncan Avenue School, Duncan avenue and Seventy seventh street.

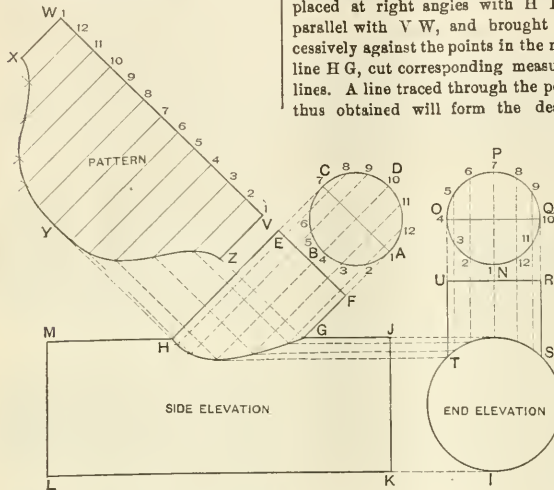
THE GALVANIZED IRON MAKERS in England have formed a combination for the checking of ruinous competition and the protection of their interests generally under the title of the Galvanized Sheet Iron and Steel Association. A large majority of the trade have, it is understood, joined the new association.

HENRY HENNINGSEN of Jersey City, N. J., is putting the finishing touches on the new City Hall job, in Jersey

THE TIN SHOP.

Pattern for Tee Joint.

From O. E. S., *New Prague, Minn.*—
Will *The Metal Worker* publish a method
for obtaining the pattern of a tee joint



Pattern for Tee-Joint at an Angle, One Pipe Being Larger than the Other.—Fig. 1.—
Joint Between Round Pipes.

at an angle, the pipes being round and one larger than the other? Also pattern for elliptical pipe to join a round pipe at an angle.

Answer.—In Fig. 1 is shown a side and end elevation of the article for which the pattern is desired. As indicated by A B C D, N O P Q and T S I, the pipes are round, pipe E F G H being joined to J K L M at an angle, as indicated by M H E or F G J. The end elevation is represented by T U R S I and the side elevation by M H E F G J K L. The two profiles, A B C D and N O P Q, are to be drawn in line with the side and end elevations, as shown. To obtain the pattern of H E F G it is necessary to determine the points in H G through which the miter line is drawn. To do this divide the two profiles into the same number of equal parts, commencing at the same points in each. Draw lines from the points in N O P Q, parallel with U T, cutting T S. In a similar manner draw lines from the points in A B C D, parallel with H E, as shown. From the points in T S draw lines parallel with M J, which produce until corresponding lines from the two profiles intersect. Through the several points of intersection thus obtained draw the miter line H G. For the pattern of E F G H proceed as fol-

lows: On E F extend d. as V W, lay off a stretchout of profile A B C D, through the points in which draw the usual measuring lines at right angles to the stretchout line. With the T square placed at right angles with H E, or parallel with V W, and brought successively against the points in the miter line H G, cut corresponding measuring lines. A line traced through the points thus obtained will form the desired

profile of which is shown by A' B' C' D'. In this example the major axis B' D' of ellipse is drawn parallel with side of arm H' E'. In Fig. 3 the round pipe is represented by J' K' L' M', and the elliptical pipe by E' F' G' H'. In this example the minor axis B' D' of ellipse A' B' C' D' is drawn parallel with side of arm H' E'. The same method was used for obtaining patterns in Figs. 2 and 3 as was used for Fig. 1.

Heating and Ventilating.

That better ventilation can be secured in public and manufacturing buildings is well evidenced by the working of the law controlling this matter in the State of Massachusetts. The enforcement of this law being delegated to the State Board of Police, the report of the chief of that body, Rufus R. Wade, is always an interesting volume and clearly indicative of the progress in this particular line. The report for 1894, which has just appeared, although detailing the work of the department in all its various branches, devotes by far the larger portion of its pages to reports upon school house inspection. Of particular value is a series of lithographed plates illustrating model heating and ventilating arrangements for school houses. These embody the ideas of the inspectors, the result of years of close observation, and may well be taken as illustrating the best practice in the State. The individual reports of the inspectors show clearly that good ventilation, as indicated by a supply of from 30 to 50 cubic feet of air per min-

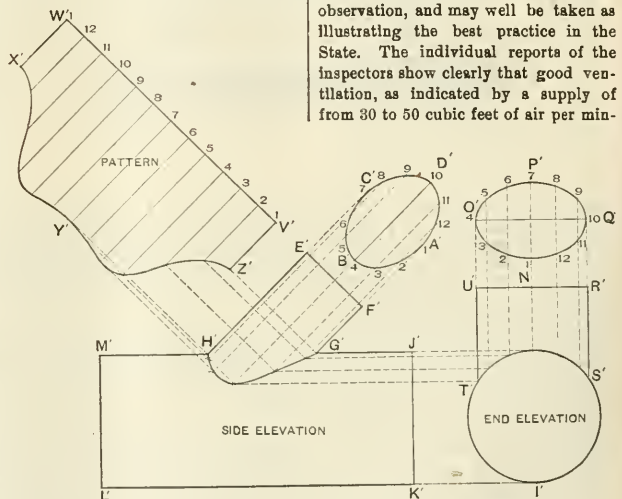


Fig. 2.—Joint Between Elliptical and Round Pipes.—First Example.

low: On E' F' extend d. as V' W', lay off a stretchout of profile A' B' C' D', through the points in which draw the usual measuring lines at right angles to the stretchout line. With the T square placed at right angles with H' E', or parallel with V' W', and brought successively against the points in the miter line H' G', cut corresponding measuring lines. A line traced through the points thus obtained will form the desired

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the shape of a fan for moving air wherever possible, and illustrate one building in which one small fan forces air to hot air furnaces and another withdraws it through the ventilating flues. Each year thus makes simpler the enforcement of the law because of the better understanding of the principles involved in ventilation and a realization that good ventilation can after all be easily secured and at moderate cost.

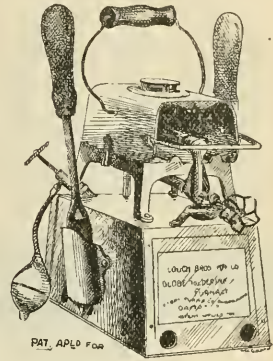
Inspection of Uninsured Boilers.

In 1893 the Legislature of Massachusetts authorized the appointment of a

The requests were complied with, and in every case defects were found, many of them of such a character that the boilers must soon become dangerous, while some were found already dangerous. It has been revealed in this way that very few school house boilers are inspected, and the fact has been emphasized that the majority of janitors are totally ignorant of boiler inspection or where to look for deterioration, and that many of them know nothing concerning the safe management of a boiler. Usually school house boilers are designed for and expected to run at low pressure, but nevertheless the inspector found numerous cases where the safety valves were stuck or overloaded, in some cases to over 60 pounds pressure. In one instance the lever of the safety valve was swung under a beam in such a way that it could not lift. The inspector cites one case, that of a large high school, where the janitor took so little interest in the boiler and its proper operation and condition that he lay upon a sofa in another part of the building while the inspection

Globe Soldering Furnace.

The Couch Brothers Mfg. Company, Dayton, Ohio, are placing on the market a new combination furnace for tinners, plumbers and canning factories under the name of the Globe soldering furnace, which is illustrated in the accompanying cuts. Fig. 1 is a general



Globe Soldering Furnace — Fig. 1. — General View of Furnace.

view of the furnace, while Fig. 2 shows the burner. The furnace is particularly adapted for work out of doors in all kinds of weather, and the manufacturers allude particularly to the stationary generator, so arranged that the flame will light the burner from the generator, making an exceedingly hot fire. It is also noted that the burner is of such shape and construction that it will not clog up by dropping solder. The manufacturers claim that the Globe furnace by having the needle point $\frac{1}{8}$ inch from the mixing tube will save one-half of the fuel. The furnace is noiseless and is used to melt lead and

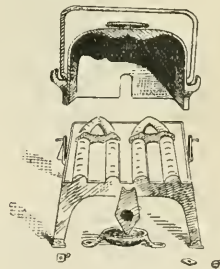


Fig. 2. — View of Burner.

heat coppers at the same time. The tank is concealed from view and is thereby thoroughly protected. The burner, it is pointed out, can be attached to any other furnace.

A German patent has been granted to Ida Ousglio of Berlin for a new method of coloring aluminum. The objects made from aluminum are first coated with zinc and then colored black by a solution of either platinum, copper, nickel or antimony. To protect the designs a varnish is employed.

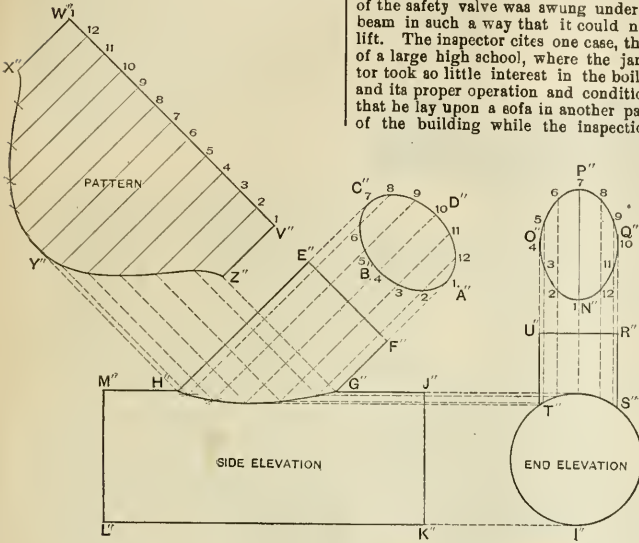


Fig. 2. — Joint Between Elliptical and Round Pipes — Second Example.

temporary inspector upon uninsured steam boilers. The thorough investigations of this officer revealed such a condition of things that the succeeding Legislature continued his services, and his report for 1894 certainly warrants his still further continuance and the enactment of more rigid laws controlling the operation and inspection of this class of boilers. This should apply particularly to that most dangerous class, second-hand boilers. The immense responsibility resting upon the man in charge of a boiler is too often overlooked, and the daily peril of those in the vicinity of the boiler is never comprehended until some dire disaster occurs. In factories where the boiler produces steam for both heating and power some most startling conditions were discovered. In one instance a small upright boiler was found, upon application of hydrostatic pressure, to be leaking badly, while a portion of the internal shell had been so eaten away that for a distance of several inches it was reduced to less than $\frac{3}{8}$ inch in thickness. The owner nevertheless supposed that everything was in first-class condition.

School House Boilers.

As the work of this department became more widely known, requests were frequently made for the inspection of boilers in school buildings.

was being made. The inspector further pertinently remarks that the condition of the boiler and its surroundings was indicative of the character of the man. Everything covered with ashes and soot, a hand hole carelessly packed and things generally in a condition to rapidly deteriorate. The necessity of the best of attention and of frequent inspection was rendered startlingly evident in the case of the explosion of a boiler at the Center School, Uxbridge, Mass., upon which the inspector also reports. The effect of the explosion was to lift bodily the floor immediately above, with the children thereon. Almost miraculously no one was fatally or seriously hurt, although nearly all were injured. The exploded boiler, which had been in use about 15 years, was of cast iron, and was found upon inspection to have had an unstayed surface 28 x 40 inches, in some places less than $\frac{1}{2}$ inch thick. Apparently for years this had been acting as a more or less flexible plate under the low pressure carried until it had cracked at the bending lines, and excess of pressure upon this particular day had caused the disaster. With the evidence of such necessity for further legislation the chief renews his recommendation of the previous year for the enactment of a law regulating the use of steam boilers and for the better protection of life in the use of the same.

THE RETAIL STORE.

Patent Air Blast Oven and Broiler Burner.

The Monarch Stove Company of Mansfield, Ohio, are using in connection with their Regal Monarch cabinet range for gasoline made on the generating principle, and their cabinet ranges in which gas is employed as fuel, the burner shown in the accompanying illustration. The device is known as a patent air blast oven and broiler burner, and consists of two hollow quadrilateral cast plates 12 x 4 inches bolted together,

company are E. Moeckel, president; H. Rettinghaus, vice-president, and John Moser, secretary and treasurer.

THE GEUDER & PAESCHKE MFG. COMPANY, manufacturers of tinware, Milwaukee, Wis., now offer a full line of cream cans and cream can trimmings for the ensuing spring trade. Among the specialties they make for the dairy trade are their widely used Fairmont cream can gauges and their self-locking cream cans and self-locking trimmings, patents on which have just been granted and

cloth bound book, 10 x 7 inches in size. In the beginning is an alphabetical index, and the first articles noticed are shoe lasts; then come well wheels, hay fork pulleys, barn door hangers, clothes line reels, &c. A number of pages are given up to sad irons and other hardware, then lawn sprinklers, pump fixtures and foot scrapers. Among the goods in the catalogue in which our readers will be especially interested are sewer grates, cesspool grates, ventilating grates, cesspool and sash weights. The manufacturers particularly allude to the solidity of their goods, and mention that they have not tightened their patterns. They will be glad to mail this catalogue with price-list to those who may apply for it.

HABERMAN MFG COMPANY, Brooklyn, N. Y., manufacturers of stamped and enameled ware and tinware, have opened a spacious main office and sample room, occupying the first floor of the new building, 73 and 80 Beekman street, New York City. The firm's factories at Brooklyn and Berlin Village, L. I., are both in active operation.

T. F. AHERN & Co. of New Haven are putting up the metal ceilings and side walls in the store of ex-Mayor Sullivan's new building at Derby, Conn.

LALANCE & GROSJEAN MFG COMPANY, 19 Cliff street, New York, favor us with their dairy goods department catalogue for 1895, a 36 page book, containing illustrated descriptions and prices of their L & G. milk cans in various patterns and milk can sundries. Special attention is directed to the L & G. improved milk can stock, now illustrated for the first time. The last 12 pages are devoted to illustrations and particulars of milk kettles, pails, pans, buckets, dippers, strainers, measures, skimmers and other dairy requisites made by the firm in enameled ware and stamped and piced tinware.

The Texas Foundrymen's Association met at Waco, Texas, on the 6th inst. The subject of convict labor formed the chief topic for discussion, and a committee was appointed to appear before the Legislature for the purpose of securing legislation which will prevent competition from the convict labor of the State with the Texas foundries. The same committee will also ask the railroads to grant cheaper freight rates upon raw material. The next regular meeting of the association will be held at Houston, Texas, May 8.

The Brooklyn Bridge trustees last week received a report from the committee on the terminal improvements, showing that the total expenditures for the work would be \$2,041,913, which is over \$300,000 more than the sum originally fixed on for the improvements. The expenditures include \$321,327 for railway and equipments; car storage yard and real estate, \$746,000; new Brooklyn station, \$120,000; reconstructed New York station, \$140,000; New York roadway, \$107,600; cable drawing, \$9,227.69.



Patent Air Blast Oven and Broiler Burner.

and having slots sawed along both edges. Through these slots or holes the air carried up from below is discharged and mingles with the gas from the burner, forming a proper mixture for combustion. The adjustment is such as to give the proper amount of air, the result being a blue smokeless flame of intense heat. By means of this burner the oven is fully heated, while at the same time broiling may be done below. The makers state that the success of the burner is found in the combination of the gas and air supplied to it.

MEMORANDA.

THE CATALOGUE issued by Emerson & Fisher, St. John, N. B., for the year 1895 is a handsome publication of over 300 pages, bound in vermilion covers, the front carrying an attractive, simple design. The first section of the publication is devoted to deep and shallow stamped wares, then comes planished tinware, followed by spanned ware, Royal embossed ware, pieced tinware, granite or gray enameled ware, white enameled ware, brass and copper ware, the latter ending the first general division of the work. The second begins with wire goods, including poultry netting, bird cages, &c. Then come wooden ware, refrigerators, miscellaneous articles, brushes, hollow ware, oil stoves, lanterns, sad irons, mouse traps, aluminum ware, cutlery, scissors, kitchen utensils, axes, hammers, hardware, the latter covering a large assortment. Toward the end attention is given to forges, farming tools, fire sets, registers, tinners' tools, &c.

THE HAUFF STOVE & HEATING COMPANY, 615 West Market street, Louisville, Ky., sustained a loss of \$1500 by fire last week, which was covered by insurance.

THE ASHLAND SCREEN & MFG. COMPANY of Ashland, Wis., are erecting buildings for the manufacture of stove boards. The size of the main structure will be 45 x 100 feet. In addition there will be a warehouse 24 x 55 feet and an engine and boiler room 19 x 26 feet. The boards will be crystallized by a special process. The officers of the

which they now propose to push vigorously, having lately very materially perfected their tools for the production of these goods.

GURNEY REFRIGERATOR COMPANY, Fond du Lac, Wis., are getting out a hanger 14 x 22 inches in size for jobbers' use, on which is illustrated their refrigerator, also parts of the same, and which calls attention to features of their goods. The company are bringing out a new line of soft wood (or linden wood) refrigerators which they refer to as handsome in appearance and as finished in imitation oak; the imitation being so good, it is remarked, that only a close inspection reveals the fact it is not real oak.

THE KEWASKUM MFG COMPANY have been organized at Kewaskum, Wis., with a capital stock of \$10,000, to manufacture tinware and sheet iron ware. The machinery has been ordered for the factory. They will also make the Hayes clothes drainer. The officers are as follows: President, Nicholas Marx; secretary, David Rosenheimer; treasurer, Adolph Rosenheimer.

"HOW TO SPRAY, When to Spray and What Pumps to Use to Insure the Life and Yield of Fruit Trees, Grape Vines, Berry Bushes, &c.," is the descriptive title of a neat pamphlet issued by the Goulds Mfg. Company, Seneca Falls, N. Y. It is in reality a special catalogue and price list of spraying pumps and nozzles for every service which the Goulds Company manufacture. The Standard and Star double acting spraying pump is shown and fully described and prices given. The Smi-Rotary, Clock, the All About, Sentinel, Barrel spray cart, knapsack pumps, bucket pumps, force pumps, &c., are all similarly noticed. Fittings are shown toward the end and a spraying calendar prepared by the Experimental Station of Cornell University is appended.

THE CATALOGUE issued by John C. Kupferle, St. Louis, is known as the 'No. 7, and in it the publishers say that they have been very careful to list only such goods as are constantly carried in stock. The catalogue is a substantial

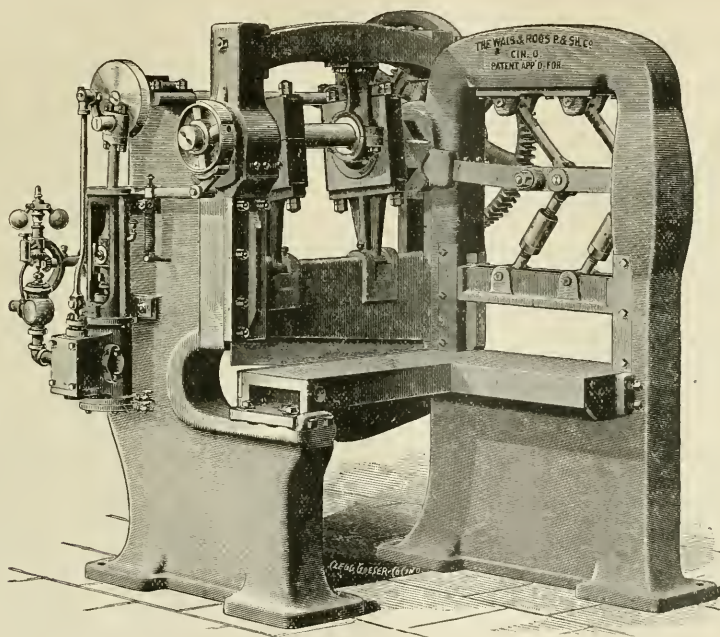
TIN PLATES.

Combined Tin Plate Shear and Doubler.

The accompanying cut represents a new combined shear and doubler with engine, built by the Wais & Roos Punch & Shear Company, Cincinnati, Ohio. The company, we understand, have been at work ever since the new industry of tin plate making had become an assured fact to get up a machine that would overcome all the inconveniences of the alligator patterns which had been in vogue in Europe for so many years. An inspection of the accompanying engraving will show what

ling the operator to double either tight or loose as he may desire. Other advantages to which attention is directed are that it is not necessary for the operator to change position while doubling, hence he economizes time; the machine furthermore doubling very heavy metal. It is compact, takes up small space and requires a correspondingly small foundation. There are no obstructions, such as pit, cam shaft, &c., and the engine and gearing are also entirely out of the way. The manufacturers mention that the machine is made of the best material throughout, the table and working parts are adjusta-

24 x 32 inches, all in one train, driven direct by a Hamilton-Corliss engine 32 x 60 inches. There are four return tubular boilers, 16 feet long, 66 inches diameter, each having 58 tubes 4 inches diameter. This steam power also operates three stands of cold rolls, 20 x 32 inches, driven by a 24 x 48 inch engine of same type. During the fourth and fifth weeks of operating this new plant, at a time when the thermometer registered 10° above to 12° below zero, although the steam pipe covering was not completed, the three mills turned out 212 tons of perfect plates. The maximum horse-power developed was



Combined Tin Plate Shear and Doubler.

a simple and compact machine has been devised. The machine is illustrated with engine attached, but if desired it may be arranged for belt power. One of the principal features in its construction is that both the shear and doubler may be operated at one time or each independent of the other. The shear is the same as the latest improved gate patterns and is adapted to cut packs and trim tin plate, the knives cutting 36 inches in width. The doubler is driven by a crank from the same shaft that operates the shear and with the connection operates the toggle joints which produce a powerful though quiet running motion. The doubler opening is 28 inches wide and the head lifts about 8 inches, made adjustable by couplings having right and left threads, so that it is exactly parallel and enab-

le and the engine, which is also adjustable, is 7 x 10 inches. When complete for shipment the machine is mounted on heavy oak skids with pipe connections all in place ready to turn on the steam, the weight being about 5400 pounds.

Required Horse-Power for Tin Mills.

Opinions differ very much regarding the horse-power required to operate tin or sheet mills successfully, and ideas of correct construction are equally far apart. Bearing upon this question, some facts are presented in the shape of results obtained at the plant of the Morton Tin Plate Company, Cambridge, Ohio. The mills are three in number,

486. The maximum product of 240 tons would have been obtained but for the sickness of some skilled employees. The mills were built by the Leeburg Foundry & Machine Company, Pittsburgh, Pa.

SCRAP.

THE WESTERN PACKERS' AND CANNED GOODS ASSOCIATION held their annual convention in Chicago last week. They represent an extensive interest in the tin plate trade, as they consume enormous quantities of tin cans in preparing their products for the market. Their sentiments with regard to American tin plate are, therefore, of much importance, especially when the fact is taken into consideration that the membership of the association is scattered

over an immense section of the West, in which the influence of manufacturers and manufacturers is less directly felt than in the East. When the question of encouraging the establishment of American tin plate factories was first agitated, they were quite generally opposed to the adoption of such a policy, as they feared the effects upon their trade of an advance in the cost of tin plate which was expected. But as prices declined instead of advancing they changed their opinions, and are now overwhelmingly in favor of supporting the American tin plate industry.

THE WAIS & ROOS PUNCH & SHEAR COMPANY, Cincinnati, Ohio, are building a number of new machines for tinning, and have, we understand, several heavy contracts now on hand which have necessitated doubling their force in the factory.

AT THE PLANT of the American Tin Plate Company, Elwood, Ind., all the nine mills are running full time and to the utmost of their capacity, turning out about 6500 boxes of finished bright plate weekly. Over 600 hands are now employed at the works.

ANNOUNCEMENT is made that a contract has been closed with Conner Brothers of Wabash, Ind., for the establishment of a tin plate factory at Converse in the same State.

THE MONTHLY STATEMENT of goods in the New York bonded warehouses shows that 7,294,929 pounds of tin plates, valued at \$150,853, were so held on January 31, as compared with 8,511,678 pounds, of the value of \$171,010, on January 31, 1894.

THE DEATH is announced, at Elwood, Ind., on February 15, of George Banfield, father of Superintendent Banfield of the American Tin Plate Works, at the age of 80 years. The distinction is claimed for the deceased of having manufactured the first tin plate made in the United States, at McKeesport, Pa., in 1874.

LEWIS CRATER, HOWARD McILVAIN AND CHARLES A. HIGH, all of whom are at present connected with the rolling mill of McIlvain & Sons, Reading, Pa., have organized a company to erect a tin plate plant in that city. The site, it is reported, has already been procured, and work will be begun upon the erection of the mill as soon as the season will permit. In the beginning they will not roll their own back plates, but will purchase them elsewhere, although later they may roll their own plates.

THE PLANS are completed for the large tin plate plant of the Loughlin Nail Company, at Martin's Ferry, Ohio. The ground is being prepared and work on the foundation of the buildings is to commence as soon as the weather permits.

A NUMBER of TIN PLATE WORKERS formerly employed at Irondale, Ohio, have made a proposition to the Chamber of Commerce of Toronto, Ohio, looking to the erection of a tin plate mill at that place, provided a sufficient bonus can be secured to put up buildings and machinery.

THE PLANS and SPECIFICATIONS for the addition to be made to the New Castle Tin Plate Mill will soon be ready for exhibition to contractors.

THE TIN PLATE TRADE seems to have been as dull in Canada of late as it has been on this side of the border. Last week, according to *Canadian Hardware*,

holders in Montreal have offered rounds of coke tin at \$3.60, and it is believed that a buyer could have an order filled at \$2.50 a box. Large stocks of plates are said to be held in Montreal.

THE NEW TINNING HOUSE under erection for some time by the Wheeling Corrugating Company, Wheeling, W. Va., is almost completed and will be put in operation some time this month.

DISCOURAGED by the prospects ahead at home, a number of Welsh tin plate workers are reported to be on the eve of breaking up their homes and emigrating to this country.

DAVIS & KELLY, Columbia Building, Louisville, Ky., who are Southwestern agents for Ema-Standard Iron & Steel Company, report good trade in tin andterne plates. The orders come from all parts of their territory, showing a good distribution of business.

The annual report of Thomas J. Dowling, State Commissioner of Labor Statistics, submitted to the New York State Legislature contains some interesting figures relative to the growth of labor organizations. In response to circulars sent out by the Commissioner last year, replies giving the information required were received from 689 labor unions and other similar organizations. These reported an enrollment of 155,303 names on their membership books. Compared with returns made by 550 unions in 1888, the Commissioner reaches the conclusion that there has been a steady, but by no means phenomenal, growth of labor organizations in the interval. The 580 organizations reporting then had 118,628 members. The figures given at either time are not, however, conclusive, as some associations throughout the State sent no returns and the statement does not include the membership of numerous mixed assemblies of the Knights of Labor and Federal unions affiliated with the American Federation of Labor. Making all allowances for these omissions, however, it is estimated that the actual membership of the labor unions in New York State cannot exceed 250,000 people, a sufficiently small proportion of a working population which is more than 6,000,000. Mr. Dowling reports that "throughout all the labor organizations of the State there is a manifest unity of action to reduce the hours of labor to keep pace with the productivity of the machines."

Pennsylvania has at last begun to earnest the work enjoined upon its Bureau of Statistics, which was created by the act of 1874. Governor Hastings has appointed Capt. J. M. Clark of New Castle, a former newspaper manager, the secretary of this bureau, and Mr. Clark has entered upon the work with a will. He is visiting the towns of the State, advertising first in the local papers that he wishes to meet the mechanics of the town at the stated place, which has been procured beforehand. His object is to secure reliable statistics relating to the building trades, and he asks for the carpenters, stone cutters, masons, plasterers, painters and other mechanics to come to the meeting. He distributes blanks which ask the mechanic's opinion as to apprenticeship laws, and what he thinks of the industrial school, and a space is left for the mechanic's answers. The effect of machinery upon the hours of work and also upon wages is another of the questions asked, and the nationality of the

workmen in the different industries of the State will be learned also; how many of them ever served as apprentices and for how long. The aim of the bureau is to secure information which will be of much interest and possibly of much value, both to the cause of learning and of labor. This is the first active effort made to make the State's Bureau of Statistics of any use or interest to the laboring men themselves.

Prof. Sylvanus P. Thompson, in his second Cantor lecture on the arc light, gave some interesting particulars as to its optics. Of the whole of the light generated less than 10 per cent. is delivered from the peak, and the crater might be regarded as a self-luminous area. It necessarily followed that the light given off is directly proportionate to the area of crater actually exposed to view, being greatest at an angle of 40° or 50°. Professor Thompson stated that an examination of the crater by the naked eye sometimes revealed a nebulous patch rather whiter than the rest, which seems to be in motion, and this, when examined by appropriate artificial means, is seen as a comma shaped object, which rotates round the crater at varying speeds, and not always in the same direction. Whether this was a real physical rotation of the flame or only an optical effect Professor Thompson did not commit himself to an opinion. Professor Thompson also pointed out that the arc as a transformer of energy into light gave an efficiency of only 20 or 25 per cent., the rest of the energy being transformed into heat. He demonstrated by experiment that the light from an alternate current is more equably distributed than from a direct current, but did not consider there was any difference of efficiency between the two if the same amount of energy were consumed under equal conditions.

In a furnace with stationary hearth erected at Anzin, France, to produce steel of extra welding quality for tube manufacture, the bricks for the burners and roof are made of magnesite, and special precautions are taken to prevent the accumulation of dust in the checker work by having straight passages without any projections. The chief feature of the process is the injection of cold air through the sides or roof, as well as the usual blast into the furnace to the extent of 5 to 15 per cent. of the weight of the air necessary for the complete combustion of the gas. The air jets are directed on to the metal bath by the use of inclined tuyeres, to lay bare the metal and to remove the glassy layer of slag or cinder from its surface, so as to facilitate oxidation. The air jets likewise cause an intimate mixture of the hot air and gas as they enter the hearth, and by so doing raise the temperature of the flame and direct it on to the surface of the metallic bath, the final result of the combustion being only slightly modified.

The recent impediments to ferry navigation between New York and Brooklyn, owing to ice on the East River, has drawn particular attention to the pressing need for ampler transit facilities between the two cities by means of more bridges. The present structure was only capable of accommodating the passenger traffic at the cost of extraordinary inconvenience to the public.

STOVE TRADE NOTES.

Cut Prices on Stoves.

The retail trade has recently been disturbed in certain sections of the country by cut prices on a few classes of stoves. The cuts which have been made are not of a character to influence much business at this time of the year. Dealers would not be disposed to lay in stocks now which would not be salable until next fall in order to take advantage of a slight reduction in price, which would be more than offset by the interest on the investment, cost of insurance, storage, handling, &c. It is in fact extremely doubtful if a very heavy cut would cause many stoves to move from manufacturers' hands into those of dealers. The latter would very likely be inclined to wait to see if prices would not go still lower by the time they were usually in the habit of placing their orders. This leads to the consideration of a special aspect of the case.

The most serious question called up by the cuts referred to is the menace which they present to the regular prices on standard stoves and ranges. Many dealers are asking manufacturers whether this is not the beginning of a general break in prices, and argue that the breach made in their hitherto solid front must go on until it involves the entire line. They are assured, however, that such is not likely to be the case. The great bulwark standing in the way of a general reduction is the wages paid in stove foundries. The leading item of cost in making a stove is labor. The price of pig iron was at one time exceedingly important, but that was when very high prices prevailed. In recent years pig iron has been so low that its variation in price has made but little difference in the cost of a stove from year to year. Labor, therefore, being the principal item, running from 75 to 90 per cent., is given the greatest consideration. Now the same rate of wages prevails in the general stove foundries as that existing in 1890, when everything was prosperous. No reduction has been even asked, because manufacturers could not see how that would make a bad condition of things better. It would not cause any more stoves to be sold and it would make their workmen discontented and perhaps the work then turned out would be less satisfactory, for poor wages usually means poor work. Paying the same rate of wages as in good times has actually raised the cost of stoves, because trade has been lighter and production smaller, thus concentrating general expenses on fewer goods, which has enhanced the cost of

each. Stove manufacturers turning out full lines are thus realizing much smaller profits and in fact are extremely fortunate if they are able to make both ends meet at the close of such a year as 1894. They most certainly seem to be in no disposition to reduce prices on standard constructions.

A Rough Winter on Stoves.

An old resident of Dundee, Ill., who has kept a record of the weather for 57 years, states that the arctic weather of this winter has been the coldest for the longest period during that entire time. All kinds of heating apparatus have been tested throughout the West and Northwest as they never were before. Furnaces and stoves have been kept at their best, not merely for a few days at a time, but for weeks. Stove manufacturers can therefore reasonably expect that more stoves will be burnt out this winter than in any previous one. They can look forward to a largely increased trade in heaters next fall as a direct result of the terrific experience through which the country is now passing. A long succession of comparatively mild winters had bred the impression that the climate of the north temperate zone was gradually changing and that ere long its name would have to be altered to the north semi-torrid zone. That impression, however, has been rudely dispelled, and there are many people who would now vote in favor of naming it the north semi-frigid zone. It can safely be assumed that the possibilities of winter weather are now more thoroughly understood than ever before by this generation of housekeepers, and greater care will be taken next fall in making preparations for the reception and entertainment of Jack Frost.

Among these preparations will be the thorough overhauling of stoves and additions to their number, so as to heat extra rooms which were uninhabitable during a large part of this winter. Dealers who are forehanded will make their arrangements accordingly by ordering in ample time so as to get precisely what they want. There are few manufacturers with the money or the nerve to pile up great stocks of all kinds of stoves, when some kinds may not be called for to any extent. The stocks made up will be of such stoves as manufacturers think will be most salable.

Dealers who delay placing their orders until late in the season will then probably have to take what they do not

want. Our readers may think this advice premature, as the buying season for next winter is remote, but the subject is one of sufficient interest and importance to be carefully kept in mind.

Death of Secretary Thomas.

At the moment of going to press news has reached us of the death of Secretary D. M. Thomas of the National Association of Stove Manufacturers, which occurred at noon, Thursday, February 21. The funeral will take place on Monday, at 2 o'clock p.m.

Stove Repairs.

BY I. OPEN.

In a short time the use of stoves for heating purposes will be dispensed with, and there is no better time to have them overhauled and put in order than when they are taken down and stored. Oftentimes this work is done by the householder, and he is not a little annoyed if he attempts to secure some repair for his stove by having to make one or two journeys to his dealer before the information is obtained by which the correct articles for repairs can be ordered from the manufacturer. If during the spring and early fall dealers in these goods would take the trouble to prepare a series of letters or articles for their local papers treating on this subject, the benefit that would accrue to the dealer would more than pay for the trouble taken. One subject that could be treated at some length is the damage that is incurred during disuse. The average person well knows that stove pipes, stoves and furnaces are more likely to rust out when connected with the chimney during the summer season than if disconnected from the chimney. They should be thoroughly cleaned and the smoke pipe either wrapped with paper or in some other way prepared to withstand the summer season. A large dealer in stove repairs in one of the great cities has been endeavoring to get some of his customers to follow his suggestions, and is surprised to find that they are not acted upon by his trade. Occasionally making a trip and having a large acquaintance, he has visited the local newspapers and investigated their willingness to print such articles in their papers if furnished them, and reports that he has met with no refusal. A letter bearing the signature of a local dealer, giving information how to order stove repairs correctly, will be read in the local paper with benefit to all

New Oil Burner.

A new fuel oil burner for domestic use has been invented by Simeon Stewart and Homer Carnes of Lima, Ohio, which is highly extolled in local journals. Stove oil, a low grade of refined petroleum, is used. It is kept in the basement and forced through the feed pipe by compressed air. The pipe is coiled in the stove, and the oil in passing through it comes in contact with the flame and is heated into a gas. Through two holes, not larger than pin points, the gas escapes into the stove into mixers where, at the point of combustion, it unites with superheated air in producing an intense flame. It is stated that there is no perceptible smell and the combustion is so perfect that every bit of soot is consumed. The best feature of the burner is the small expense it takes to operate it. A gallon of oil, costing less than 4 cents, will run the stove ten hours. W. J. Broome of Lima has secured the sole agency, and has already completed arrangements for the manufacture of burners and tanks on a large scale.

Consumption of Gas for Heating.

One of the New York dailies gives the following account of the use of a gas heating stove as related to a reporter: "A gas stove is an unalloyed blessing, provided"—and the speaker paused suggestively. "Provided what?" "Provided you do not buy the stove from the company who are furnishing your house with gas at that particular time." "I have evolved this theory from personal experience," the gentleman continued, "and don't object to giving the details. Some time ago I bought a gas stove for my sitting room. There was a furnace in the house, but we thought the stove would be cheery and bright and an addition to the comfort of the family circle. It proved satisfactory in every respect, but the gas bills far exceeded our wildest anticipations. From the time that stove came into the house the bills gathered in size and weight until they were positively staggering. I stood it as long as I could, and then I sent and asked the gas company to come and take away the stove, that I might regain my peace of mind. I did not complain to them of the bills, I simply told them that I didn't want the stove any longer. They took it away. Then, wishing to try an experiment, I went to another company and bought me another gas stove, if anything larger than the first. This stove was introduced into my house without the knowledge of the gas company who supplied the gas, and the bills were one-third smaller. I have never pretended to account for this eccentricity on the part of the little instrument that registered the gas used. I simply relate the facts."

Gas for Cooking.

Aside from the convenience of gas for cooking the cost is a matter of interest. It is a common assertion that gas for household cooking is as cheap or cheaper than coal, and in one department of hotel cooking experience corroborates it. In one of the oldest and best hotels on lower Broadway, New York, the charcoal broiler was replaced by a gas broiler, and the patrons at once noticed that they were served quicker, claiming their steaks and chops must have been cooked in advance, though no fault was

found with the quality or flavor. Some of those who were well acquainted with the proprietor had the pleasure of visiting the kitchen and watching the broiling as done by gas. A saving of about five minutes in time was reported. During one of the celebrations in New York at the time of the naval display, over 3800 pounds of steaks and chops were broiled by the gas broilers during 14 hours of one day. The broilers have six compartments, each accommodating one wire broiler about 15 inches long.

At another large hotel further up town two charcoal broilers, each 3 feet long, were replaced by gas broilers, and after a careful watch for some time a difference in the cost of fuel of \$1.80 per day was shown in favor of the gas broiler. In some of the larger banks in New York a complete kitchen and restaurant is run for the employees and gas is used exclusively for fuel for broiling, broiling, roasting, and heating water.

ODD PLATES.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, have found it necessary, owing to their rapidly increasing business, to enlarge their factory, and have let contracts for an addition to their present works which, when completed, will give their plant a frontage of 400 feet and a depth of 150 feet and will be three stories high. This new space will be largely devoted to the manufacture of gas stoves, making theirs the largest vapor and gas stove factory in the world.

THE READING STOVE WORKS of Reading, Pa., have recently received a large order for ranges from Rotterdam, Holland. A local paper states that it is the general opinion that this demand for American stoves is the outcome of the efforts of the Philadelphia & Reading Coal Company, whose agent was sent abroad some time ago with sample stoves and anthracite coal for the particular purpose of introducing the latter. It is stated that the ranges to be sent to Rotterdam will be equipped with the same style of grate as that in use in this country.

AT THE ANNUAL MEETING of the stockholders of the Canfield Stove Company, held in Kingston, N. Y., on Monday, February 11, the following were elected directors for the ensuing year: P. A. Canfield, V. B. Canfield, M. B. Canfield, J. M. Holmes, M. G. Holmes. The following officers were elected: V. B. Canfield of East Orange, N. J., president; M. B. Canfield, vice-president; P. A. Canfield, treasurer and manager; M. G. Holmes, secretary.

THE Detroit Free Press recently published a detailed description of the magnificent steel yacht now being built by the Detroit Boat Works for Commodore Merrill B. Mills, treasurer of the Michigan Stove Company and also heavily interested in other stove companies. It is to be larger than any yacht thus far launched on the great lakes west of Cleveland, but will surpass all others on the lakes in the perfection of its appointments and in speed. The contractors promise a speed of 18 miles an hour. The length over all will be 132 feet, water line length 110 feet, beam on deck 17 feet 6 inches, and molded depth 8 feet 9 inches. The propelling power will be a triple expansion engine with 10, 16 and 26 inch cylinders by 6 inch stroke. The machinery is to be built to develop 250

horse-power. The interior will be lighted by electricity. The boat will represent an investment of \$70,000 when completed, which is to be before July 15. Mr. Mills has attained high rank in yachting circles, his title of commodore having been regularly obtained by election to that position in the yacht club of the lakes.

THE JOSEPH BELL STOVE WORKS at Muncie, Ind., which had been idle for several weeks making extensive repairs, resumed work about the 1st inst.

THE FULLER & WARREN COMPANY of Troy, N. Y., have issued a unique announcement calling attention to the merits of their Stewart ranges. It is in the shape of a doctor's prescription and gives the ingredients as food, water and fuel. Of the latter only a small quantity is required, while the results are given as "XLEnt." It is intimated that if the Stewart range is used regularly in the family it will prevent that tired feeling so often experienced by housekeepers. The directions accompanying the prescription are as follows: "Three times daily, before meals. Shake well before using."

THE GREAT WESTERN STOVE COMPANY of Leavenworth, Kan., resumed operations on the 5th inst., after having been shut down for over two months during the dull season. They expect to continue in regular operation from this time forward.

THE OFFICE and WAREHOUSES of the Sill Stove Works have been removed to the office and warehouses of the Chicago Stove & Range Company, at 63 and 70 South Canal street, Chicago, Ill., one block north of the Union Depot, and on the corner of Madison and Canal streets.

A. L. RUSSELL will represent the Danville Stove & Mfg. Company, Danville, Pa., with headquarters at 41 North Eleventh street, Philadelphia, Pa., and will travel in the States of New Jersey, Delaware and Eastern and Southeastern Pennsylvania. The company have this year added a new line of furnaces and four-hole ranges to their already large and varied line. They have secured the Eastern agency for the Monarch gasoline and gas stoves for Pennsylvania, New Jersey, New York and New England States, and have distributing depots at 41 North Eleventh street, Philadelphia, and 284-286 Pearl street, New York City.

JOHN D. GREEN, the late manager of the Superior Stove Works, at Superior, Wis., has accepted a position with the Detroit Stove Works, and will travel over Southern Michigan and Northern Indiana. The principal owners of the Superior Stove Works are disposed to put them in operation as soon as practicable, and will probably make a start about April 1.

ACCORDING to Government statistics just issued, our exports of stoves and ranges during 1894 attained a value of \$240,936, against a value of \$235,796 in 1893 and \$205,348 in 1892. Our export trade thus shows growth, although it is not at a very rapid rate.

THE NATIONAL VAPOR STOVE & MFG. COMPANY of Lorain, Ohio, have effected a reorganization and are now ready for business.

THE PECK-WILLIAMSON HEATING & VENTILATING COMPANY of Cincinnati, Ohio, announce that they will open a branch house at Webster City, Ia., making it a distributing point for Iowa, Nebraska, the Dakotas, Kansas and

Minnesota. This firm have a branch house at Dayton, Ohio, one at Pittsburgh, one at Chicago and one at St. Louis. E. R. Swan will be the manager of the Webster City house.

ORSON WILSON, 199 Broad street, Newark, N. J., is selling a new draft regulator for cooking stoves. It is a casting designed to take the place of a cover and is a large register which, when open, admits air to check the draft. Satisfactory results are reported from its use.

AT THE ANNUAL MEETING of the Peninsular Stove Company, held at Detroit, Mich., a few days ago, William B. Moran was elected president for the twelfth consecutive term.

JOSEPH P. MITCHELL, at one time president of the Stove Molders' Union in Troy, died of consumption on Friday, February 8, at the age of 67 years. His death occurred in Utica, N. Y., to which place he moved about ten years ago, where he was foreman in one of the stove works.

EDWARD GRIFFITHS POWELL, vice-president of the Gobeille Pattern Company, Cleveland, Ohio, died in Kansas City February 10. Mr. Powell was born in Ohio in 1841, and served through the war, being twice severely wounded. At the close of the war he embarked in the cattle business, in which he was very successful, and was well known in this line through the South and West. While Mr. Powell did not take a very active part in the management of the Gobeille Pattern Company, he was very much interested in their success. When he died a friend said of him, "the business world lost an honest man," and this short eulogy, when truly merited, covers the highest praise.

THE ENTERPRISE STOVE COMPANY of Vincennes, Ind., recently broke ground for an additional warehouse, which has been made necessary by reason of the demands of the trade and the lack of room for advance storage.

A NEW ORGANIZATION was recently formed (?) in Cincinnati, Ohio, during the convention of manufacturers, to be known as the Plumbago Club, the following officers having been elected: J. S. Hibbs, representing J. W. Paxson & Co., Philadelphia, president; J. D. Smith of the J. D. Smith Foundry Supply Company, Cincinnati, Ohio, vice-president; H. F. Frohman and T. L. Griffith of the S. Obermayer Foundry Supply Company, Cincinnati, secretary and treasurer respectively. The principal object of the club being the enrollment of members whose veracity will pass unimpeached insures the strictest surveillance of the past record of any proposed candidate. Another clause in the by-laws and constitution adopted by the new organization is that no greater discount than 75 and 50 and 50 and 10 per cent. be allowed on any material sold. It is perhaps needless to state that this will meet with unanimous approval. After a protracted session reaching into the small hours, the first meeting closed with the understanding that another be held at the same place the last Saturday in February.

THE PENINSULAR STOVE COMPANY of Detroit, Chicago and Buffalo are distributing a circular illustrating the Peninsular wrought steel ranges for 1895. This is a completely new line which the company have brought out, and the goods are offered in any style, size or combination desired for private houses, restaurants, hotels and public institutions. The ranges are constructed of

cold rolled wrought steel, are asbestos lined throughout, and the grate can be withdrawn without removing a single plate or bolt. The circular illustrating the goods is printed in colors, and the illustrations are accompanied by full descriptive particulars.

Trade Notes.

THE CINCINNATI STAMPING COMPANY, Cincinnati, are directing attention by means of an advertisement elsewhere in this issue to the Robinson World's Fair Steam Cooker. They refer to the fact that it can be used on any kind of stove with economy and advantage, and that it cooks an entire meal at one time, using but one fire, and that it is especially adapted for gas or gasoline stoves.

AMONG [recently authorized corporations in Illinois are the following: Edgcombe Sash Balance & Lock Company, Chicago; capital stock, \$100,000; incorporators, Charles H. Edgcombe, William J. Titley and Ernest Uhlch, Jr. Illinois Stamping Company, Chicago; capital stock, \$40,000; incorporators, Charles D. Milne, Carlos A. Miller and Mendeville J. Barker. The Monarch Cycle Mfg. Company, at Chicago; capital stock, \$500,000; to manufacture bicycles; incorporators, Chandler Robbins, John W. Kiser and John S. Emmert. Phoenix Telephone & Mfg. Company, at Chicago; capital stock, \$100,000; to manufacture electrical apparatus; incorporators, Lee R. Brown, E. E. Yaxler and J. H. Biley.

THE AFFAIRS of the McCullough Iron Company, whose main office is at Philadelphia, have been placed in the hands of receivers, and the Girard Life Insurance, Annuity & Trust Company of Philadelphia and Henry Whiteley have been appointed and duly qualified as such. The company announce in a circular that the assets are far more than sufficient to pay off all liabilities in full in the course of time. Under the orders of the court the receivers will continue to operate the different works of the company for the present. Two days after the McCullough Iron Company passed into the hands of receivers their representatives in Philadelphia, the McDaniel & Harvey Company, made an assignment to the Girard Trust Company and Henry Whiteley. In their circular they state that the interests of the two companies were so intimately interwoven that the assignment was made as a matter of protection and precaution, to protect the interests of stockholders and creditors. The assets of the company, the circular states, are ample and much in excess of all liabilities, and creditors will be paid in full. The McCullough Iron Company are proprietors of the following works: North-East Forge, North East & Shan-non Mills, at North East, Md.; Min quas Mill, Wilmington, Del.; West Amwell Mill, Elkton, Md.; Octoraro Mill, Rowlandville, Md., and the Charbon Chemical Works, North East, Md. They manufacture Galvanized Sheet Iron extensively, also Bar Iron, their specialty being H. R.vey's patent cleaned Sheet Iron. The officers of the two companies are Henry Whiteley, president; Enoch McCullough, vice-president, and Huxley Harvey, treasurer.

THE ANNUAL MEETING of the stockholders of the Novelty Stamping Company, Bellaire, Ohio, was held recently

and the result of the year's business was reported as being very satisfactory, although no dividend was declared. The capacity of this concern for the manufacture of railroad and tubular lanterns, stamped ware and sheet metal specialties has recently been doubled, the firm having added to their equipment a No. 14 Bliss press, at a cost of \$5000. At the present time the firm have sufficient orders on hand to guarantee steady operations for the next six months.

A. MUEFORD, Hartford, Conn., has reported plans for the enlargement of his electrotype foundry, which will double his capacity in this branch, besides adding to his facilities for wood engraving, designing and printing. The alterations will be begun at once and completed as soon as possible.

POPE'S ISLAND MFG. CORPORATION, New Bedford, Mass., have just completed a new rolling mill plant for the production of their Howard non-corrosive metal, which is largely used by jewelers, metal spinners and metal workers in general.

It is said that the United Mine Workers have decided to withdraw from the Knights of Labor and reorganize on their own account. Such a movement would seriously cripple the Knights of Labor and might lead to the accession from that body of other important associations.

Out of the 27 strikes that occurred in the State of Pennsylvania last year only three were successful.

There has lately been introduced at Havre, France, a new type of steam vessel for river traffic in which the power for the propeller is obtained from a gas engine. "L'Idée," one of the first of these boats, is of 350 tons, and is driven by a vertical gas engine of 40 horse-power. The smallness of the room taken up by the engine and the ease of manipulation are referred to as the principal recommendations for the use of gas engines on shipboard. A syndicate has been formed in France for building marine gas engines.

The engineering committee of the Ohio and Lake Erie ship canal have appointed Geo. W. Lehman of Philadelphia to direct the preliminary surveys. He will have charge of the three surveying parties.

Western coal was offered in carload lots at \$1.10 a ton, on the tracks, at Chicago last week, the lowest price touched since the coal war began.

The National Lead Company have declared their usual quarterly dividend of 1 1/2 per cent., payable March 15.

The Montreal (Can.) Chamber of Commerce are making an effort to establish a commercial museum in that city.

The J. H. Vogan Car Works of New Castle, Pa., have just completed a handsome street car for the Second avenue, New York, line, and the Conelly Gas Engine Works of New Castle have equipped the car with a gas motor. The agent of the company is now in New Castle to inspect the motor and car, and inside of a week it will be tested on the track of the New Castle Street Railway Company.

TRADE REPORT.

The Iron Market.

In spite of the continued low prices of Iron and Steel products, a more hopeful feeling is spreading among Eastern manufacturers. This is due principally to the fact that costs have been steadily crowded down, until now makers feel that they are partly safe in their own territory. This applies to Pig Iron as well as to Steel. In the latter the basic open hearth furnace has become the salvation of the Eastern maker. Pig Iron for this purpose is being delivered at a low price, while cheap Melting Scrap has been available in quantity in their territory. The result is that with modern improved practice Basic Open Hearth Steel can be produced in the East at a cost very close to the price at which Western and Bessemer can be laid down in Eastern markets. This is a phase of recent development which has inspired so much confidence that considerable improvements in rolling mill and Steel plant are either under way or are in contemplation. The trade will watch these developments with keen interest, and will divest itself of the impression, too widely prevailing, that a decadence is progressing in a section which is in reality securing a new lease of life.

It has transpired that the recent large sales of Southern Foundry Irons in the Chicago district were secured only by receding from the prices which leading Southern makers have clung to for a considerable time. There has been a fair distribution from Cincinnati.

The advance in the prices of Wrought Iron Pipe seems to have had the usual effect of causing buyers to test the sincerity of sellers by keeping out of the market.

In metals an advance in Tin is noted, Copper is weaker, while Lead has declined under the pressure of moderate sales.

Pig Iron.—The volume of business continues light in New York City and its tributary district. Consumers are shopping closely and show no hesitation in backing out of orders when bargains are offered to them by other sellers. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

Philadelphia advices indicate that a fairly good demand for Pig Iron has been met with in that market and at inside prices there is no difficulty in placing liberal amounts of material. Ordinary Irons for pipe founding, &c., are wanted at about \$10, some sales having been made at that figure for water delivery, rail deliveries being held at a trifle more money. Good No. 2 Foundry X is taken at \$11.25 @ \$11.50, although for some brands \$11 has been accepted for what is said to be a strictly first-class

article. There is nothing in the immediate outlook to indicate any special change in either price or demand. Sales have been in moderate quantities at about the following prices for Philadelphia, and from 20¢ to 30¢ less for water delivery, or at points such as York, Harrisburg, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

Local Pig Iron has again taken the lead in sales in the Chicago market. One order was placed for 2000 tons and quite a number of others for smaller quantities. Consumers are pushing for deliveries as much as ever. Sellers of Southern Iron state that the business in sight for them has been cleaned up for the present and inquiries are now being received. The large sales of Southern Coke which were recently made here were closed at cut prices by furnace companies which have hitherto maintained a firm front. Ordinary quantities are held at our quotations. Lake Superior Charcoal has moved in carload lots only. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.50
Southern Coke, No. 3.....	9.75 to 10.25
Southern, No. 1 Soft.....	10.25 to 10.50
Southern, No. 2 Soft.....	9.75 to 10.25
Alabama Cur Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.50 to 16.00
Other Ohio Silvery.....	14.25 to 15.00

There is considerable difference of opinion just now as to the prices on Iron in the Pittsburgh district for the second quarter of the year. Some in the trade believe that there will be an improvement in the second quarter, while others, equally well informed, hold the opinion that while the present heavy production is maintained there is very little chance of prices showing improvement. Foundry Irons continue in light demand and prices are unchanged. We quote as follows:

No. 1 Foundry.....	\$10.50 to \$10.65 Cash.
No. 2 Foundry.....	9.65 to 9.75

The past week in the Cincinnati market has not been marked by any large transaction in Pig Iron, and prices have continued low, but there has been a fair run of small orders ranging all the way from car lots to contracts for 600 tons, and in the aggregate from 12,000 to 15,000 tons have been distributed, and the business is widely scattered. It is certainly evident that there is a revival among manufacturing industries, but the recuperation is so gradual that it is scarcely perceptible from day to day, and it is only when the volume of business for different periods is contrasted that the improvement is realized. On the whole, the outlook is more encouraging, the weather being more favorable and recent developments gratifying. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75

Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

In the St. Louis market the local consumption is reported as showing a fair increase, and the demand is of a more satisfactory character than it has been for some weeks. Prices, while they do not improve, maintain a fairly steady front and are not being shaded to any extent. No. 2 Foundry is quoted at \$6.76, f.o.b. cars Birmingham, and this price is not shaded, with the exception of one furnace, who are cutting the price about 10¢ per ton. The fact that this furnace is in the hands of a receiver explains the price. There is no large business being placed, but the general market is kept active by the number of small sales, which vary from a carload to 400-ton lots. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25

Metal Market.

Pig Tin.—The strained conditions under which Straits Tin for spot delivery was made to command an unusual premium over prices at which current month deliveries were sold and freely offered, gave place to a more normal state of affairs early in the week. This resulted partly from more liberal arrivals, giving ample supplies, and relaxation of force by holders of other supply. More recently prices have advanced somewhat owing to livelier buying on speculative account, particularly for March and June delivery, and freer movement of Tin into the channels of consumption since the down turn in spot prices. There is nothing in the general statistical position that would appear favorable to a much higher level of values, since stocks are still large and the movement from the Straits quite liberal. Shipments thence during the first half of February included 350 tons to the United States, 1200 tons to London and 850 tons to the Continent, against a total of 1875 tons in the corresponding period of last year. Straits Pig in small retail parcels is quoted at 15¢ @ 15½¢ per lb, the lower figure being the most common.

Copper.—The weakness of the market noted in our last report has been illustrated this week in a reduction of price by the Calumet & Hecla Company—a reduction, moreover, that was not accompanied by the customary report of more or less heavy business having been consummated. Other evidences of weakness exist in the fact that producers generally have used more effort to secure business, and in some instances shaded the popular quotation to facilitate matters, with results that are easily measured. Evidently home consumers have settled down to buying only as their requirements dictate, and the export outlet is not all that could be desired. Foreign market requirements are, in fact, filled to a considerable extent from stock

consigned by some of the mining companies. Later in the week a somewhat better business was reported in moderate amounts for home consumption. Jobbers' price for small lots of Lake Ingot from stock is about 10½¢ $\frac{1}{2}$ lb.

Sheet Copper.—Dealers report a better inquiry for Coraice Copper and orders also show a slight increase. As a whole, business compares favorably with that of last year at the same season, and the outlook for a good trade in the spring and early summer is thought to be favorable. Sheet Copper in small lots is quoted by jobbers at 14¢ $\frac{1}{2}$ lb. net.

Pig Lead.—At the opening of the week the market was extremely quiet and without any change. Spot stock was held at last week's premium, and futures were virtually neglected at old rates. In the middle of the week, however, the scene changed, with considerable offerings at the lowest recent prices. This weakened the market, but did not stimulate business to any degree, sales being still unusually light and inquiry tame. American Pig in small lots from store is unchanged in price, jobbers quoting 3½¢ @ 2½¢ $\frac{1}{2}$ lb.

Spelter.—Dealings have been very moderate here, and the demand has not improved in the slightest degree. For a time offerings were more reserved, and sellers' figures placed a fraction higher, but later the selling pressure revived and the apparent improvement in values disappeared. Ordinary Western brands in small lots are quoted at 4¢ @ 4½¢ $\frac{1}{2}$ lb.; the usual premium being asked on fancy brands.

Sheet Zinc.—Little or no business is being done in this material beyond purchases of small jobbing lots for present consumption. Jobbers quote 4½¢ @ 4½¢ per pound in 600lb casks, and 5¢ @ 5½¢ for smaller quantities.

Antimony.—No improvement in the demand has taken place and the market is rather weak. Hallett's in small parcels is quoted at 8¢, and Cookson's at 9½¢ $\frac{1}{2}$ lb.

Nickel.—Sellers' prices are 35¢ @ 40¢, according to size of order.

Tin Plate.—With the advent of milder weather the demand in this section has developed more life and strength, jobbers reporting a gratifying increase in spot business, which, in the aggregate, compares favorably with the business lately done. Individual orders, however, continue quite moderate in size, and but little is yet being done in future contracts, except in the case of Coke Tins. Cannery are reported to have lately placed some substantial orders for deliveries extending into April, but holders of Plates are not anxious to close contracts for far ahead at present low prices, usually demanding a slight advance for deliveries beyond the current month. Production on the other side is likely to be much restricted by the closing down of a large proportion of the Welsh works. On the other hand, the productive capacity of American works is being weekly increased. Prices are weak, and recent arrivals have been free.

The condition of the British Tin Plate market is described in a special London cable dispatch of February 20, to *The Iron Age*, as follows: Tin Plate has been in somewhat better demand and a fair business has taken place. Buyers realizing that prices have reached bottom are more willing to place orders, and offered a

slight advance where stock was urgently required. Business has been chiefly in Oil sizes for Russia. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 10 14 x 20..... 9/ @ 9 1/4
Siemens Cokes, 10 14 x 20..... 8/ @ 8 1/4
Tremie, 20 x 20..... 23/ @ 23/4
Charcoals, 10 14 x 20..... 10/6 @ 10/8

Sheet Iron.—The increase in inquiries for both Black and Galvanized Sheets for extended delivery, referred to last week, still continues, and considerable business has been placed. Some manufacturers are not disposed to book orders very far ahead at present prices. Jobbers' quotations for small lots of No. 27 Common Iron from store rule at about 2.65¢. Galvanized Sheets are inclined to weakness in price. Small lots are quoted at the discount of 75 and 5¢ @ 75 and 10¢ off. The failure of one of the largest producing firms during the current week and the stoppage of their mills will cause for the time being a considerable decrease in the output of Galvanized Sheets, which may tend to stiffen prices in the near future.

Chicago Report.

Scrap.—A large movement has suddenly taken place in Heavy Steel Scrap, caused by buying orders from a leading Pittsburgh Steel company. Other material is quiet. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Malleable Cast.....	5.00	....
Store Plate (free of burn).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Flow Steel and Breaking Stock.....	4.00	....
No. 2, such as Shovels, Hoes, &c.....	3.00	....
Old Boilers—whole (iron).....	3.00	....
(Iron)—cut in single Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horseshoes.....	7.50	....
Copper Bottoms.....	6	¢
Copper Clips and Heavy.....	7	¢
Heavy Brass.....	6	¢
Light Brass.....	3	¢
Pipe Lead.....	2½¢	....
Tea Lead.....	2	¢
Zinc.....	2½¢	....
Rubber.....	4	¢

Anthracite.—The demand is excellent and dealers are pleased with the opportunity to work off their stocks instead of carrying them over into another season. Hence prices do not stiffen. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.75 \$5.00
Milwaukee, W.....	5.75 5.00
Kansas City, Mo.....	7.95 8.20
Council Bluffs, Iowa.....	7.95 8.20
Lincoln, Neb.....	8.10 8.35
Sioux City, Iowa.....	7.95 8.20
Aberdeen, S. Dak.....	8.00 8.25
Dubuque, Iowa.....	6.05 6.30
Madison, Wis.....	6.25 6.50
St. Paul, Minn.....	7.25 7.50
Burlington, Iowa.....	6.25 6.50
Des Moines, Iowa.....	7.75 7.95
Davenport, Iowa.....	6.05 6.30
St. Joseph, Mo.....	7.95 8.20
Leavenworth, Kan.....	7.95 8.20
Omaha, Neb.....	7.95 8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.55

CONDITION OF THE

Hardware Trade.

ADVICES from the principal centers indicate that on the whole the month of February thus far has not been characterized by an important increase in the volume of business, a fact which is accounted for, to some extent at least, by the exceptionally severe weather which has prevailed, interfering with travel in many sections and in some putting a stop practically to any unnecessary outdoor activity. In some lines, however, there has been a good movement, and some of our advices indicate a trade which, under all circumstances, should be reasonably satisfactory. The low prices which prevail are an unpleasant feature of the situation, and in this regard there seems to be as yet little indication of a general improvement, and on several lines there is much irregularity and demoralization. Competition is very active, but many manufacturers recognize the fact that prices have reached a level at which it is the part of wisdom to refrain from making further concessions. Some of the jobbing houses are making earnest efforts to prevent undue cutting of prices by the wholesale trade, but with only a moderate degree of success, and prominent jobbers are offering some lines, which they use as leaders, at very low prices. On many goods, however, they are selling at a very satisfactory margin of profit, as prices to the retail trade have not on the whole kept pace with the decline in the prices at which they purchase the goods. The cutting on the part of the jobbers is, however, having a bad effect on the market as a whole. Quotable changes in prices are, however, few. There is some complaint in regard to collections. The course of the politicians in Congress in regard to financial matters meets with almost universal condemnation from business men and elicits emphatic expressions of disapproval.

Advices from Chicago.—Shelf Hardware has recovered from the shock of the blizzard week. Mails have been coming along satisfactorily and travelers have been able to make their wonted trips with some regularity. The volume of business has consequently regained much of its former proportions, but there is still plenty of room for improvement. Orders for future shipment of seasonable goods are falling off, as prices are steady and no fear exists of either scarcity of goods or higher cost. Steel goods are in smaller demand than in previous years. They will evidently be bought as needed instead of being contracted for in advance. The Bolt market is somewhat disturbed by cut prices which are being quoted for immediate acceptance. Tinware is an exception to the general course of the Hardware trade. It is in very good demand, showing that stocks have not yet been brought up to their normal condition. An unpleasant feature of the trade just now is the slowness of collections. Money appears to be getting scarce in agricultural communities. Credits are consequently being scrutinized very carefully, and new customers are obliged to make a very clear showing to get liberal treatment. The volume of business as compared with a year ago is very much better. Manufacturing consumers in country localities are buying more freely, and the outlook continues to improve, but

prices keep very low and margins are discouragingly small.

Notes on Prices.

Wire Nails.—The Wire Nail market continues, as at our last report, in excellent condition, and prices are firmly maintained by the manufacturers. The mills are fully occupied with orders and report an excellent volume of business, including some large purchases by leading houses, the demand, however, being principally for lots of moderate size, the aggregate of which is large. The market in the West is, however, to some extent disturbed by exceptionally low prices which are quoted by two prominent Chicago jobbing houses, not only for shipment from stock but also from factory in carload or less than carload lots. The prices named are lower than the ruling factory prices at the present time, even in the largest lots, and it is maintained by the manufacturers that the Nails are being offered by these houses at lower prices than they purchased the goods. Relating to this matter we have the following communication from a prominent manufacturer of Wire Nails, in which it will be observed that he suggests that the trade purchase promptly Nails which are offered to them at these exceptional figures:

There is a "fight" on in Wire Nails between the jobbers of Chicago, who are offering Nails at a lower price than they can replace them for, and one of the parties is offering to the extent of a single carload only, to one buyer, Nails at a less price than he is paying for them to day. Manufacturers are holding prices firm at 90 cents Pittsburgh and Cleveland, \$1 Chicago and \$1.05 East St. Louis to largest buyers for immediate shipment. As a manufacturer, I advise purchasers to lay in all these low priced Nails they can get, as I look for a further advance very soon. With 130,000 kegs less capacity a month than there was last spring, why not? The question with the buyer will be, not the price, but "Where can I get Nails?"

Advices from Chicago.—The Wire Nail situation is unchanged, although strong efforts have been made to effect a settlement of the fight between the local jobbers. The manufacturers have plenty of orders and large inquiries are being received, but buyers will not close until they see whether the Chicago price is to be advanced. Meanwhile jobbers quote 95 cents to \$1.05, Chicago, for lots of any size up to one carload, the lower price being made by two houses only.

Cut Nails.—The Cut Nail market continues quiet, without change in prices. Small lots from store are held at 90 to 95 cents. With the coming of spring weather manufacturers are anticipating a marked quickening in the demand, and refer to the fact that they will enter upon the season with considerably smaller stocks than usual.

Advices from Chicago.—Only a moderate volume of business is reported by manufacturers. They state that no expansion in their trade is to be expected until the building season opens throughout the Northwest. Jobbers continue to quote small lots from stock at \$1.

Barb Wire.—The Barb Wire market is steady, with a good amount of business and many inquiries. Small lots from store in New York are held at \$2.15 to \$2.20.

Advices from Chicago.—Manufacturers are enjoying an improving trade,

with larger shipments and better inquiries. The only thing lacking to make the situation entirely satisfactory is the low price still being quoted by some local jobbers. Prices are unchanged, small lots from stock selling at \$1.65 for Painted and \$2 for Galvanized.

Postal Scales.—Gillfillan Scale & Hardware Company, Chicago, are putting on the market the National Postal Scale and the United States Postal Scale. The National is sold to the trade at \$24 per dozen and the United States at \$21 per dozen, 30 days net, 2 per cent. off ten days.

Glass.—Jobbers complain of a lack of business, and there is a slight decrease reported in the number of American Glass factories in operation. The consumptive demand for Glass is limited, and at the present time there appears to be few if any orders of a speculative character being placed. It is understood that another meeting of the Western Window Glass manufacturers will be held to arrange for a further reduction in the production of Glass and to put prices on a better paying basis. Meetings of manufacturers in the past have had this object in view, but thus far they have not been able to come to an amicable agreement. The New York market for Glass in small lots is represented by the following quotations: Single strength, 85 and 10 to 85 and 15 per cent. discount; Double Strength Glass, 85 and 20 per cent. discount. The Plate Glass situation remains unchanged. Orders are for small quantities, so that the larger portion of the Glass made is being put in stock at the factories. It is understood that the new arrangement among Plate Glass manufacturers has not yet gone into effect.

THE SWARTS METAL COMPANY, 120 West Lake street, Chicago, have changed their name to the Swarts Metal Refining Company. The change has been made in consequence of the great demand for refining. This demand has been found to be so large that the company have concluded to do their own refining, and therefore thought the new name more explanatory of their business. The company have just issued a cloth bound catalogue giving a full description of the various kinds of metal which they handle. This comprises Genuine Edison Babbitt, Edison Babbitt, Nickel Babbitt, Engine Babbitt, Nos. 1, 2, 3 and 4 Babbitt; Solder, Stereotype Metal, Spelter, Bar and Pig Tin, Antimony, Pig Lead, Electrotyping Metal, &c. These various kinds of metal are described and the compositions of the several alloys are given, with recommendations as to their special use. The company carry all kinds of metals for use of plumbers, tinner, roofers, hardware dealers, electrotypers, &c. They also conduct a separate department for handling scrap metals in lines relating to the alloys and metals previously mentioned.

AT PITTSBURGH last week a rule was granted on George S. Gricom, receiver of the Moorhead-McCleane Company, to show cause why the New York Life Insurance Company should not be allowed to obtain a judgment for \$350,000 against the company. On November 6, 1886, Moorhead & Co. placed a mortgage of \$350,000 on their property with the New York Life Insurance Company. Later the property was conveyed to the Moorhead-McCleane

Company. When the bill in equity asking for the appointment of a receiver was filed, the New York Life Insurance Company were not made a plaintiff. The latter allege that no part of the mortgage has ever been paid, and in addition they have paid \$1476.03 as premiums on the fire insurance to protect their interest in the mortgage. They ask to be allowed a judgment against the company for the amount of the mortgage.

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THE METAL WORKER.

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Observation.

The habit of observation is one that may well be cultivated by every mechanic. To the practical man knowing but little of books and dependent almost entirely upon experience, there is, in fact, no other way by which he can obtain the information which is of use to him in his work. And yet there is a marked difference in individuals: some have their eyes so wide open and the faculties so ready to receive new impressions that nothing seems to escape them, while others plod along in the same old rut, looking neither to the right nor the left, and as a consequence absorb practically nothing from the progressive age in which they live. There is certainly no reasonable excuse for a lack of the faculty of observation. It is something that improves by using and more completely than anything else takes a man out of himself and makes of him a part of the world in which he moves. The story is familiar of the man of noted ability and extended knowledge who formed in youth the habit of observation by looking into store windows as he passed at his ordinary gait and then enumerating the various articles he had thus noted in his brief glance. To those who are older and have taken up some trade or profession, there is necessary only the spirit of perseverance. Make up your mind that each day you will, by observation, learn at least one new thing. Determine that, particularly in matters of importance, you will understand whatever comes in your way—the why and the wherefore. So far as it is proper to be inquisitive, ask questions, seek information far and wide, but do it intelligently or all will go for naught.

Travel.

It is hardly to be expected that the ordinary mechanic will have even the most modest opportunity for travel in

the broad sense in which foreign tours are generally denominated. Nevertheless in his smaller sphere he has some chance to go about, to see new faces and new things, and, if he will, he may profit by them, proportionately, as the foreign tourist by his extended travels. Certainly nothing broadens a man in a general way as does travel. The lessons of the Fair are still fresh in our minds, and to many individuals a week in that wonderland of the age has marked an expansion in judgment and a comprehension of the world and its opportunities such as never came to them before. Many a mechanic who, by the character of the trade he follows, is compelled to go from place to place may well keep his eyes open. If he goes among other workmen in his own line, he will find much to be learned that is new to him, even if he be a full fledged journeyman, and if he is the progressive man that he should be, he will profit by all that is good and throw aside all that is useless. If it is his duty or privilege to go through other shops or manufactories he will see new methods, new tools, ingenious hints and convenient appliances, a knowledge of which, obtained by careful observation, may some time prove of inestimable value. Then, too, he will meet men whose characteristics he does not know, and his wits will be sharpened to estimate them at once and deal with them understandingly. He will see human nature in all its moods, and will be successful—particularly as a salesman—in so far as he is capable of adapting himself to those moods and thereby obtaining the sympathetic attention of the person with whom he deals.

Commissioner of Patents John S. Seymour, in his report of the work of his bureau for the calendar year 1894, just submitted to Congress, shows that during the year there were 20,803 patents granted and 1600 trade-marks registered. The patents expired in the same period numbered 12,920. The total expenditures were \$1,100,047. The receipts over expenditures were \$57,392, and the total balance to the credit of the Patent Office in the Treasury of the United States amounts to \$4,369,135. In proportion to population more patents were issued to citizens of Connecticut than to those of any other State. Next in order in proportion to population are Massachusetts, the District of Columbia, New Jersey, Montana, Rhode Island, New York and Colorado. As to foreign countries, more patents were issued to subjects of Great Britain than of any other country, Germany and Canada coming next in order. The Commissioner recommends that the working force of the Patent Office be increased in order to adequately meet and keep pace with the growing work of this department.

Co-operative Trading in Great Britain

The "Annual" of the Co-operative Wholesale Societies, Limited, of England and Scotland for 1895 gives some interesting facts and figures in regard to the progress of the commercial co-operative movement in Great Britain during the first 30 years of its existence. In that period, from 1864 to 1893, inclusive, the aggregate sales of the societies amounted in round numbers to \$525,000,000 dollars, on which the profits amounted to \$6,500,000, notwithstanding the fact that the profit charged on the purchases of the members was merely nominal. The average yearly increase in sales has amounted to nearly \$2,250,000, the aggregate for 1893 approaching \$50,000,000. In the last ten years the volume of sales has more than doubled. The number of branch societies holding shares in the Co-operative Wholesale Society is 1010, with a total membership of 873,698. Its share capital is \$2,736,720; loans and deposits, \$4,403,915; reserve fund, \$171,900, and insurance fund, \$1,156,243. The Co-operative Wholesale Society has branches in all the principal cities and towns of Great Britain and Ireland, as well as in the chief European seaports, running a line of six steam vessels for the conveyance of freight to its branches abroad. It has its own banks and owns a considerable number of factories in the United Kingdom, where it manufactures most of its own products.

The magnitude of the commercial co-operative system, as now existing in Great Britain, is only paralleled by the remarkable success which has attended the movement. It must be borne in mind that the particular aggregation of societies above alluded to does not by any means embrace all the co-operative trading associations in the country. There are many, some being of the first importance, which are not affiliated with it. The total sales for the past 31 years of all such societies in Great Britain and Ireland have been over \$3,233,700,000 in value, at a profit of about \$285,500,000, upon a share capital of \$70,308,980 and a loan capital of \$16,113,350. They have a total membership of over 1,300,000.

The Mayor and Council of Cadiz, Ohio, are advertising for bids for the furnishing and erecting complete of the air lift machinery necessary to pump from drilled wells the water to supply the pumping station in the said town. The materials will consist of two compressors, a receiver, four or more foot pieces and lubricators, gauger, &c. They also want bids for furnishing the material and performing the labor necessary for the construction of the system of water works, requiring 450 tons of cast iron pipe, 10 tons of special castings, 50 hydrants, 39 valves and boxes, 2 pumping engines, 2 boilers, brick pumping station and stack, pump well and 22 7/8 lineal feet of pipe laid. The plans will be ready by March 1, 1895, and the proposals will be received until noon Tuesday, March 19. James Moore is the Mayor and L. E. Chapin of Canton and W. G. Clark of Toledo are the consulting engineers.

THE LETTER BOX.

Are Gravel Roofs Durable?

From G. F. WHEELOCK, *Birmingham, Ala.*—I notice in *The Metal Worker* of February 16 that your correspondent "G. D. B." of Greenville, S. C., makes the assertion that he can put on a good tin roof at \$4 per square, and make more money on it than he could with a gravel roof at \$5 per square. Being engaged in both tin and gravel roofing, and being of a very inquiring turn of mind, I would like to have him inform me where he buys his plate, it being presumed that to furnish a good 20-year roof he would only use a good redipped tin, and the best I have been able to do is \$15 per box in the market for this grade, and this, without any freight added, is equivalent to \$4.30 per square for tin alone for a standing seam roof. I cannot help thinking that you have misquoted "G. D. B." as to the \$4 roof; either this, or he is basing his calculations on a very cheap plate; and unless he has the advantage of buying a superior plate at a price that others would pay for wasters, he certainly must have a very poor opinion of a gravel roof. A gravel roof, in my opinion, especially where asphalt is substituted for coal tar composition, is the best material for a roof where the pitch does not exceed $\frac{1}{2}$ inch to the foot. It has the advantage of a tin roof, when properly applied, of being a first-class roof under any climatic conditions, which is not the case with the metal. In this city tin roofing, where laid flat locked and soldered, has proven very unsatisfactory, due, I suppose, to the presence of our iron furnaces to a great extent. There is one argument which is a good sized club in the hands of the gravel roofer: the roof does not require painting every two years, which is a fixed charge on a tin roof that in a few years amounts to the first cost of the roof.

As the result of my experience, I want to make the "assertion," which will not probably meet with the approval of "G. D. B.," that a first-class gravel roof can be laid for less money than a first-class tin roof, with a greater profit for the roofer, if gravel or shell can be procured within 200 miles of the work.

Insurance Rates on Gasoline Stoves.

From J. G. F. W., *Indiana.*—I was interested in the letter that appeared in *The Metal Worker* recently, respecting the rates of insurance where gasoline furnace is used. We have inserted in our policy permission to use gasoline for soldering pots, and to have 1 gallon of benzine for blacking purposes, to use gasoline stoves for exhibition purposes and to sell gasoline, stipulating where the gasoline shed is located, and that it be drawn by day only. We paid no extra rates.

Frozen Wind Mill Tanks.

From W. A. F., *Matawan, N. J.*—I have several customers who have water tanks supplied by wind mills. The

tanks stand on towers 30 feet from the ground, the feed and supply pipes being wrapped with two layers of $\frac{1}{2}$ inch hair felt and incased in a box packed with salt hay. During the last cold snap the water froze on the bottom of the tanks 2 or 3 inches thick. This, of course, stopped the flow of water and allowed the feed pipe to freeze in the box. Will any of the readers of *The Metal Worker* inform me if they have had a like experience and if so can they suggest a remedy? Any information they can furnish through the Letter Box will be much appreciated.

Heating of Tin Roofs.

From J. G. F. W., *Indiana.*—I notice the inquiry from "G. D. B." in *The Metal Worker* of February 16, who complains about heat of tin roofs. I would suggest, however, that all difficulty can be removed if he will put paper underneath the tin.

Scant Radiation.

From HOR WATER, *Pennsylvania.*—I have had placed in my residence a hot water heater, with results that are very unsatisfactory. The heating contractor contracted to heat the house to 70° in zero weather, which it is impossible to do, although the temperature of the water in the heater is 200° and all the radiators hot. Will you please advise me if the defects are in the boiler, radiation, or system of piping?

Answer.—The chief causes of dissatisfaction in hot water heating are: 1. Insufficient boiler. 2. Improper system of piping. 3. Insufficient radiation. If the boiler is capable of maintaining a temperature of 200° when supplying all the radiators, it is evident that it is sufficient. If the system of piping delivers the water to the radiators so that it is possible to maintain the same temperature in all with all valves open, it is evident that the piping system is properly constructed. If the boiler maintains and the system of piping delivers the water at high temperatures to the radiation, and the rooms are not heated to the temperatures desired, the cause is insufficient radiation. It is evident from your description of the apparatus that "insufficient radiation" is keeping you in "hot water."

Paste for Asbestos Paper.

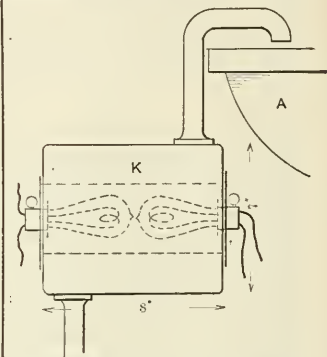
From J. CALLAGHAN & SONS, *Cleveland, Ohio.*—We would be very thankful to you or your readers if you would favor us with a recipe for a paste to stick asbestos paper on hot air pipes. Something that will keep and not get sour and smell.

Note.—Some furnacemen simply soak or wet the edges of the paper thoroughly and make a good lap, and when

the paper becomes dry there is no need for a paste. Our readers are invited to describe their methods.

Heating Water by Incandescent Lamps.

From C. F. N., *Brooklyn.*—In answer to "J. R.," Hoboken, N. J., who wishes to know a way to heat water for lavatory purposes by means of incandescent lamps for a customer in an office,



Heating Water by Incandescent Lamps.—
Fig. 1.—Basin with Water Cylinder.

the following rough sketch will give him some idea of fixing up a cylinder or a coil of piping for the purpose. In Fig. 1, A is the basin and K is a metal cylinder 6 x 7 inches with a hollow core formed of a 3-inch metal tube, as indicated by the dotted lines. The cylinder contains, roughly, nearly $\frac{3}{4}$ pints of water. Fig. 2 shows one of the lamps with a metal guard of $\frac{3}{4}$ inches and fixed on an ordinary holder with a switch combination. These lamps go on at each end of the cylinder as shown in Fig. 1. The radiant heat of the lamp communicates

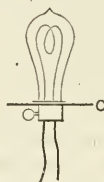


Fig. 2.—Lamp with Metal Guard.

to the water by means of the metal surrounding it. About 75 per cent. of the electrical energy is efficiently utilized this way in heating the water and about 10 per cent. additional is retained in the metal. The two lamps shown in the sketch are ordinary 16 candle power, running on a 100-volt circuit. If the cylinder is made of thin copper the time

that the water will take to boil is about 45 minutes; then one lamp can be switched off and the other lamp will evolve enough heat to keep the water at boiling point till wanted. The lamps can be easily fixed on the ends of the cylinder by suitable clips catching on the metal shield of the lamp holder C. Fig. 3 explains itself. The only difference between it and the plan shown in Fig. 1 is that: there is no inner tube and a coil surrounds the lamps instead of a water jacket. The inside diameter of the coil should be 3 inches or a little more than the diameter of the lamps used. If "J. R." goes to any electrician he will get a suitable device by means of which the wires connecting the lamps can be taken to the desk of his customer in the office so that he can himself control the heating of his lavatory water.

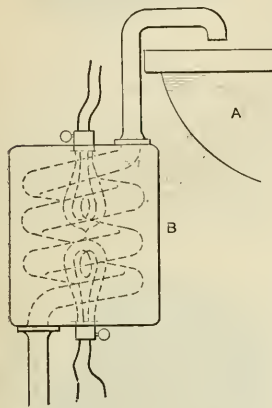


Fig. 3.—Basin with Coil in Cylinder.

Blackened bulb lamps, whose light giving properties are impaired, can be economically used in the cylinder for heating.

Anti-Freezing Mortar.

From G. H. W., Takoma Park, D. C.—In *The Metal Worker* of February 16 a correspondent of yours asks for a frost proof mortar. A recent item in a technical journal, translated from an Austrian publication, gives the result of a series of experiments on the subject, and states that Portland cement mortar mixed with a 7 per cent. solution of salt water and laid with dry brick or stone gives satisfactory results, lime mortars or mortars containing lime being of no value. *The American Architect* advises, as a result of experience, that the stone or brick used should be heated, likewise the mortar, the object being to retard the freezing sufficiently to permit the cement to set. A furnace such as is used in making asphalt mixtures for floors or paving can be successfully used for the purpose.

A Cold Air Duct.

From J. H. R., Munhall, Pa.—In *The Metal Worker* of February 2 I find described by "J. S.," Pittsburgh, Pa., a very admirable form of cold air duct and light shaft combined. While not wishing to criticize, I beg permission to offer one alteration which I believe would render it more complete. It is that the slide B should be made in

the form of a sash, so that at all times, whether closed or open, light may be transmitted to the cellar. I hope this suggestion may meet the approval of the inventor.

Which Is Best For Furnace Tops?

From J. C., Cleveland.—We would be very much pleased to receive the opinion of the readers of *The Metal Worker*, also the results of their experience, in taking hot air pipes from the top of the casing hood on furnaces. We have adopted this plan for the past year, and we are now experiencing some trouble, and we lay it to this method of piping. We make our hood from 7 to 10 inches high, perfectly flat top, with a 2-inch sand ring. We notice the majority of furnace manufacturers show in their illustrations of different furnaces that pipes are taken from side of hoods, but our understanding of this method is that their furnaces are too high to use any other way. Our trouble has been that we do not obtain the force of hot air from the registers that we ought with a good hot fire, having furnace properly arranged, cold air duct and pit of ample size. Any information that your readers can give us through your valuable paper will be thankfully received.

Making An Oil Tank.

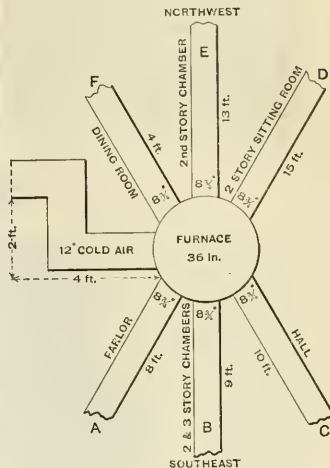
From J. G. F. W., Indiana.—Replying to the inquiry of "W. R. T.," who asked about an oil tank in *The Metal Worker* of February 16, I would make a box 16 inches square and 8 feet long, and then line it throughout. It is easier made and will stand rougher usage. The best size of pipe to use is 1 inch galvanized wrought iron.

Trouble with Furnace.

From DEALER, Philadelphia.—I inclose the plan of a house heating furnace as put in by a customer of mine. The work was well done, as it was intended to be a sample job. The furnace operates in a manner different from any I ever heard of and is a puzzle to the customer and myself. The furnace is 36 inches in diameter, has six 8½-inch heating pipes and a 12 inch cold air supply. The house is protected by a dead wall on one side and has a 4-foot yard on the other. Pipe A leads to the parlor, is 8 feet long, and cold air comes out of this pipe. Pipe B leads to second and third story chambers, is 9 feet long, and operates properly. Pipe C leads to the hall on first floor, is 10 feet long, and remains cold. Pipe D leads to the back sitting room in second story, is 10 feet long, and operates properly. Pipe E leads to chamber in second story, is 13 feet long, and operates properly. Pipe F leads to dining room on first floor, is 4 feet long, and gets hot last.

Answer.—An inspection of the plan inclosed by our correspondent shows there are six 8½-inch heating pipes leading from the furnace to the upper rooms. The area of a pipe 8½ inches in diameter is approximately 60 square inches, so the combined area of the six pipes would be 360 square inches. The cold air supply pipe is 12 inches in diameter, and has an area of 113 square inches, approximately. It is usual

with furnacemen to have the cold air supply equal to three quarters of the combined area of the heating pipes. Following the above rule, the cold air supply pipe should have an area of 270 square inches, or 157 more than a pipe 12 inches in diameter. In order that the furnace should have a proper supply of cold air, a rectangular pipe 12 x 22½ or a round pipe 18½ inches in diameter would be the size required. By holding the hand over the parlor register it may appear that cold air is coming up, when it is really passing



Trouble with Furnace.

down, as can be determined by holding a lighted match over the register. As the cold air supply is not sufficient to give the proper amount of air to the furnace, some of the pipes do not operate, while one or more of the pipes may allow the cool air from the floor to pass down to supply the deficiency. For a remedy it is suggested that the cold air supply be enlarged as indicated above and the sharp turns removed from it. It is natural for hot air to flow to the highest point of escape, which accounts for the pipes to the upper rooms being heated.

Enameling Gasoline Stoves.

From J. G. F. W., Indiana.—In reply to "W. R. T.," whose inquiry appears in *The Metal Worker* of February 16 respecting enameling stoves, would say: Remove all the dirt by scraping, then wash all over with gasoline to remove the grease; then apply Bonnell's Nubian Enamel. If it is too thick, thin it with turpentine, and if too cold, set the can in hot water. A better way still is to unbolt the top and send it back to the factory, where it can be baked on and a better job made.

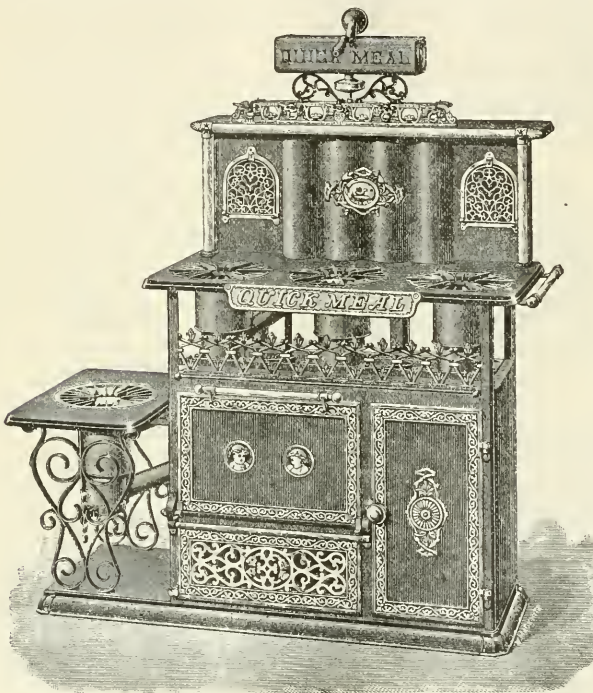
Troubles are believed to be again on the point of breaking out in the pottery industry of Trenton, N. J., owing to recently introduced reductions in the wage scale.

THE RETAIL STORE.

The Quick Meal Gasoline Stove.

The Ringen Stove Company of 414 and 416 North Broadway, St. Louis, Mo., have incorporated a number of interesting improvements in their line of Quick Meal gasoline stoves for the season of 1895. Prominent among these may be mentioned the balanced oven door, which is claimed to work without noise and is so adjusted that one finger will open or close it. The weight working inside of the flue is connected direct to the hinge of the door, thus

the base extends entirely under the range and step, thus adding to the general appearance of the stove. The grates are loose so that they can be taken off, leaving the stove top smooth and easily cleaned. In the accompanying illustration we present a view of what is known as the Quick Meal No. 955, which the company are offering for family, hotel or restaurant use. It has three burners in the top surface and an extremely strong one under the step. There are also two under the oven, making a total of six. The general appearance of the range is improved by a



Quick Meal Stove No. 955.

balancing it and saving it from breakage. When the door is closed the weight swings out of the flue, so that while baking is in progress there is nothing in the flue to obstruct it. Another feature for this year is the Quick Meal tank, which is provided with a detachable and cleansible float. No packing is used and all the joints are metallic. The heads on the tank are not only soldered, but are doubly seamed on a special machine made for the purpose. The drip valves are provided with stuffing boxes, which prevent leakage in case the valves become worn from long use. The stove is constructed with a steel base formed like the front, and, it is claimed, will never break. In the case of the step stoves

nickel towel bar and polished nickel plated rail along the top edge of the high shelf, which is supported by polished nickel plated uprights. This line of ranges is constructed of cold rolled steel and is of first-class workmanship throughout.

The Yankee Sprinkler.

The Cleveland Lock Company, Cleveland, Ohio, are introducing the lawn sprinkler shown in the accompanying cuts. The sprinkler is made in one piece, with a cord for drawing it around on the lawn. The hinge shown in Fig. 1, at the top of the device, is raised to throw a half circle, as in Fig. 2, and is laid flat to produce a full circle of

spray, as in Fig. 3. It is explained that the sprinkler has a sprinkling capacity of from 35 to 40 feet in diameter, according to the pressure; that it

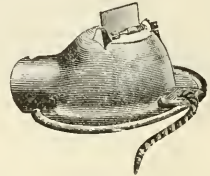


Fig. 1.—The Yankee Sprinkler.

can be placed close to the sidewalk (Fig. 2) and not wet passers by, and that it can be moved over the lawn by the cord without turning off the water or wetting the feet. It is claimed that

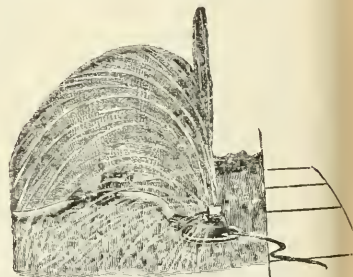


Fig. 2.—The Yankee Sprinkler's Half Spray.

there are no revolving parts or small holes, thus leaving an opening in the sprinkler the same size as that in the coupling, so that there is no back pressure on the hose. The sprinklers are

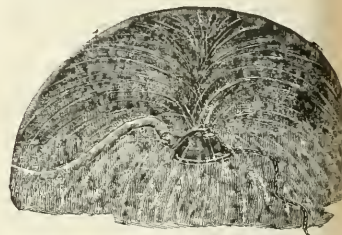


Fig. 3.—The Yankee Sprinkler's Full Spray.

furnished japanned and galvanized, packed one in a box, complete with cord and a rubber washer.

S. M. PORTER is fixing up a building on Main street, Bristol, Conn., with a view to opening a tin and stove store, also a plumbing department. The firm name will be S. M. Porter & Sons.

Kitchen Time Table.

The following table is issued by the
Oven Thermometer Company of Iron-

space 80 feet in diameter; that the hose
nozz'e and the tips on the ends of the
arms are adjustable so that it can be
adapted to as small a space as is desired,

compress the bottom and side into one
compact body, the parts being so com-
pletely united that they cannot come
apart. The convex shape of the bot-
tom strengthens that part of the pail,
and also prevents it from coming in con-
tact with the floor or ground.

BEEF, sirloin rare.....	400 degrees per lb	8 min.
" well done.....	450 "	12 "
BREAD, white loaf.....	450 "	50 "
BISCUIT.....	750 "	5 "
"	650 "	10 "
CAKE, fruit.....	450 "	2 hrs
" sponge.....	350 "	45 min.
" loaf.....	350 "	45 "
" layer.....	550 "	10 "
COOKIES.....	550 "	5 "
CHICKENS.....	400 "	2 hrs
CUSTARDS.....	550 "	30 min.
DUCK.....	400 "	2 hrs 30 "
FISH.....	400 "	40 "
GINGER BREAD.....	400 "	50 "
GRAHAM GEMS.....	600 "	10 "
HALIBUT.....	500 "	30 "
LAMB.....	400 "	1 hr 30 "
MUTTON, rare.....	400 "	per lb. 8 "
" well done.....	450 "	12 "
PIE CRUST.....	650 "	10 "
PORK.....	400 "	2 hrs 30 "
POTATOES.....	550 "	1 hr 15 "
PUDDING, bread.....	550 "	30 "
" plum.....	450 "	30 "
" rice.....	550 "	30 min.
" tapioca.....	550 "	40 "
ROLLS.....	500 "	30 "
TURKEY.....	400 "	3 hrs
VEAL.....	550 "	1 hr 30 min.

ton, Ohio, and as being of possible in-
terest to our readers we present it here-
with.

The Comet Lawn Sprinkler.

E. Stebbins Mfg. Company, Bright-
wood, Mass., are putting on the market
the lawn sprinkler shown in the accom-
panying cut. The sprinkler, except the
legs, is made of solid brass, well nickel
plated. The device is made with the
globe or body in two parts, and by
means of the swiftly revolving arms
and intermediate gears the upper half

and that the sprinkler is substantial,
durable and attractive in appearance.

Standard Fiber Ware.

The Standard Fiber Ware Company
of Mankato, Minn., have issued a cir-
cular describing improvements recently
made in their goods. They have had
expert chemists working for the best
possible water proofing and finish, and
believe they have it. They have also
had expert machinists at work on a pail
which will have the elasticity, strength
and durability of the wound flax fiber

Steel Mortar and Brick Hods.

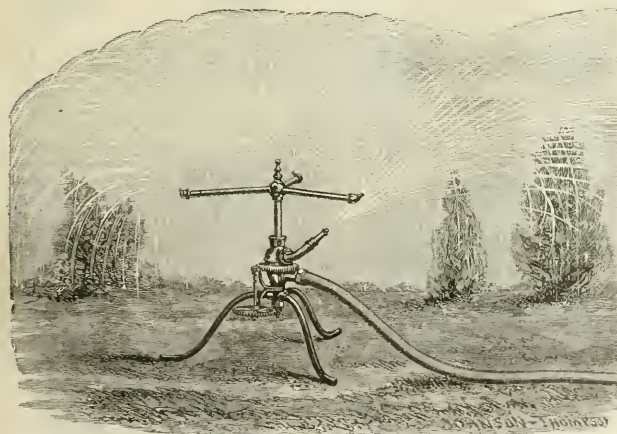
The Geauga Foundry & Mfg. Com-
pany, Painesville, Ohio, have recently
put on the market Ohio water tight steel
mortar and brick hods. The bodies of
the hods are described as folded from a
single piece of sheet steel without cut-
ting the metal and as being reinforced
on the edges and at the dumping point.
The hods are provided with a malleable
iron fork and wooden shoulder saddle,
allowing the user to attach cloth, if de-
sired, to the under side of the saddle.
The malleable fork is provided with a
socket for holding a hardwood handle,
the socket being so constructed as to
allow the shrinkage of the handle to be
taken up and to readily replace a
broken handle. The hods are furnished
black or galvanized and are shipped
knocked down.

MEMORANDA.

THE BRADLEY & HUBBARD MFG.
COMPANY, with factory and offices at
Meriden, Conn., have issued circulars
calling the attention of the trade to
some of their heaters. Among these
may be mentioned the Orient heater,
embodying a novel application of the
mammoth central draft lamp, supplying
both heat and light at the same time
and at very little cost; also the B. &
H. oil heater, having Russia iron drum
and nickel plated finish. This heater is
said to be of sufficient capacity to warm
a good sized room, and that the lamp
can be used for lighting purposes by
removing the cylinder and holder and
putting on a No. 89 B. & H. chimney.

MANNING, BOWMAN & Co., 57 Beek-
man street, New York, announce that
they have decided to remove to new
quarters on May 1 next. In the
interval they will offer their New York
stock, including staples and regu-
lar goods, as well as some lines from
their inventory, in old patterns and job
lots, which will be closed out com-
plete at quotations to please close buy-
ers. They state that after removal all
orders will be shipped direct from fac-
tory to customers. They believe that
the trade will be equally well served in
this way, all their staples and new
goods being on exhibition at their show-
room, while salesmen will call upon
customers as heretofore. Due notice
will be given concerning their new lo-
cation.

THE CLEVELAND STAMPING & TOOL
COMPANY, Cleveland, Ohio, manufac-
turers of Solid Steel Seamless Hollow
Ware, issue a supplementary catalogue
for 1895 in which is shown a line of
Hollow Ware made from cold rolled
wrought steel, highly tempered, in-
cluding Spiders, Griddles, Broilers,
Kettles, Scotch Bowls, Stew Pans, &c.
The company advise us that their regu-
lar catalogue will be ready about April 1.



The Comet Lawn Sprinkler.

of the body is made to revolve slowly
around, carrying the hose nozzle, from
which a large stream of water is thrown
far out beyond that thrown by the arms,
thereby covering, it is claimed, four
times the space covered by the ordinary
form of stationary sprinkler. It is stated
that with an ordinary force of water the
sprinkler will thoroughly sprinkle a

pail, without its weak bottom. The
new pail is called a truss bottom pail,
being made with the bottom in a sepa-
rate piece. The bottom is convex in
shape, with a dished rim fitting inside
the lower part of the pail. A steel band
is fitted over the edges of the bottom
and the pail body, which is then placed
under powerful steel rollers. They

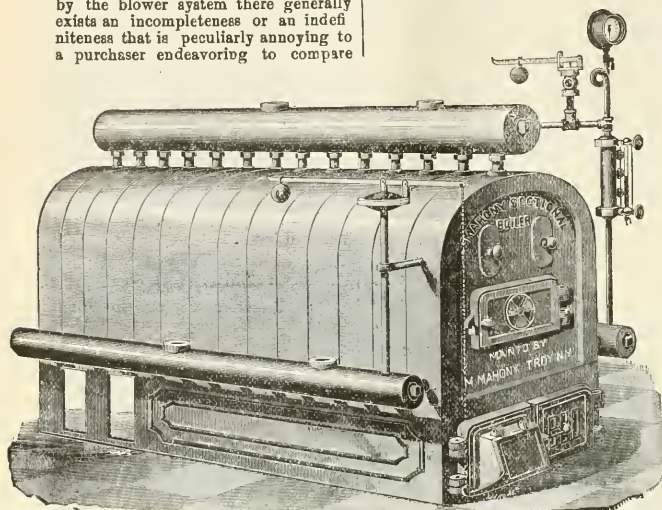
The distress among the settlers in
some parts of Western Kansas has been
so severe that the people have been
eating horseflesh, not being able to get
other food. They are training their
cows to draw plows, &c., and by this
means the farmers hope to be able to
put in a crop this spring.

STEAM AND HOT WATER.

Blower Specifications.

From W. S. N., *New York*.—In the specification of apparatus for heating by the blower system there generally exists an incompleteness or an indefiniteness that is peculiarly annoying to a purchaser endeavoring to compare

speed nor power stipulated, or again an impossible combination of volume, air pressure and horse-power may be de-



The Mahony Vertical Section Steam or Water Boiler.—Fig. 1—Showing the Boiler Arranged for Steam.

prices. One bidder may give the size of the fan wheel, while the other gives only the nominal size of the fan house. It would appear that under ordinary conditions the exact size of the fan wheel and its general construction

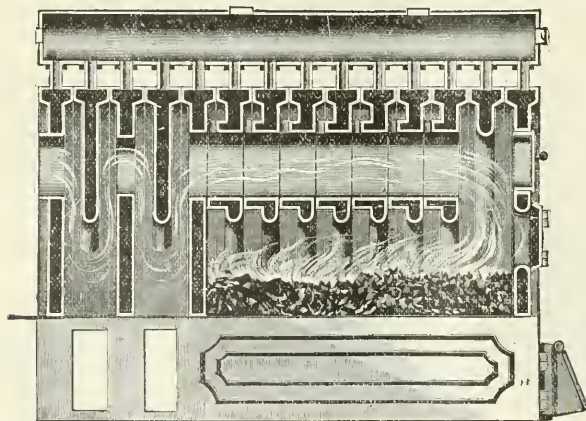


Fig. 2.—Longitudinal Sectional View.

ing. One may describe the heater as of so many lineal feet "capacity," another may clearly specify the exact number of feet of pipe. Even when an expert has drawn the specifications they are not always as definite as they should be. It is not at all unusual to find a fan indicated only as to be sufficient to deliver a certain amount of air, with neither

should be specified as well as the actual size of the heater.

The *Metal Worker* was favored this week with a call from James A. Harding, who takes a hearty interest in the welfare of the American Society of Heating and Ventilating Engineers.

The Mahony Vertical Section Steam or Water Boiler.

One of the latest boilers brought out is the Mahony vertical section boiler for either steam or water, made by

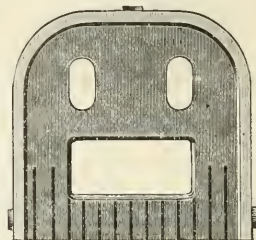


Fig. 3.—Front Section.

M. Mahony, Troy, N. Y., and which is shown in the illustrations herewith. Though it is now being offered to the trade generally for the first time, it has been under test for the past two years. The special features claimed for the

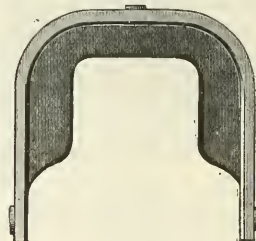


Fig. 4.—First Section Over Fire.

boilers are vertical water ways, large fire surface, and the arrangement of the flues to utilize the heat of the gases. Fig. 1 shows a general view of the steam boiler with the draft regulator, steam gauge, safety valve and water glass.

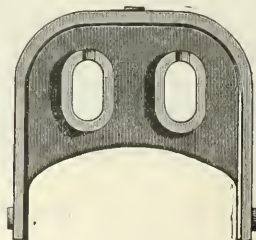


Fig. 5.—Section Over Fire.

Fig. 2 is a longitudinal sectional view of the boiler at the center showing the arrangement of the sections and the course of the products of combustion as they pass through to the chimney. Fig. 3 shows the front section of the

boiler with openings for cleaning the flues and for the feed door. Fig. 4 shows the first section over the fire, designed to permit the gases to pass up to the flues in the sections over the fire which are shown in Fig. 5. Fig. 6 shows the back section of the fire box with the outlets to the rear flues where the draft is made to take alternate down

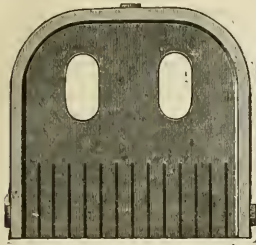


Fig. 6.—Back Section of Fire Box.

and up turns by first coming into contact with the rear down draft section shown in Fig. 7, and passing down, then rising to pass through the opening in the rear up draft section shown in Fig. 8. The back section with the smoke outlet is shown in Fig. 9. The boiler is increased in size and capacity by the addition of both fire and flue sections,

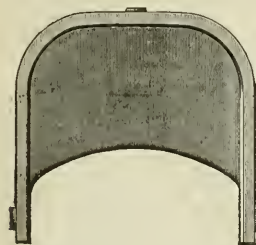


Fig. 7.—Rear Down Draft Section.

Figs. 5, 7 and 8. The sections are all independent of each other, and are connected by nipples with a return header at each side at the bottom, and a flow header or steam drum at the top. The boiler is provided with a grate that is composed of sections, for air space and durability, connected so that by work-

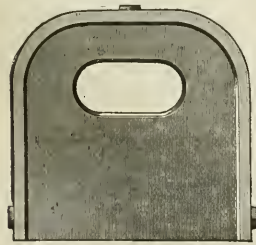


Fig. 8.—Rear Up Draft Section.

ing a lever all parts of the fire are subject alike to a cleaning when the grate is oscillated. The boiler is made in five sizes, with a fire box 31 inches wide and increasing 6 inches in length with each size from the first, which is 33 inches long; the different sizes made

with 10, 12, 14, 16 and 18 sections having respectively 8, 9, 10, 12 and 18 square feet of grate surface. The boilers are rated to carry 1600, 1800, 2100, 2400 and 2700 square feet of direct steam radiation, and 2700, 3100, 3600,

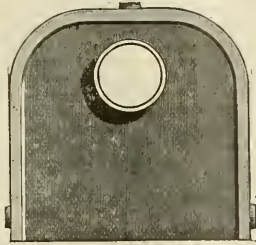
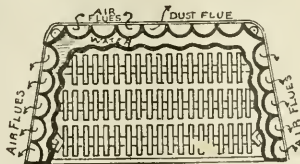


Fig. 9.—Back Section.

4000 and 4500 square feet of direct hot water radiation. The height of the boilers is 6 feet. A new catalogue giving full details of the boilers is ready for distribution.

The Popular Hot Water Fire Place.

Our readers will be interested in the Popular hot water fire place which is being manufactured by Wray, Wetzell & Robinson, Bellwood, Pa. Fig. 1 is a plan view of the fire place at a level of the grate showing the water section and the air spaces. Fig. 2 shows a sectional elevation of the fire place and pipe connected with two radiators on the floor above for heating two rooms by direct radiation, while the fire place is arranged to heat one room on the first floor by heated air currents and the other from the fire direct and also by hot air. The fire place is made in three sizes, Nos. 1, 2 and 3. In the No. 1 the lower section only is used for water heating, while the upper section, which is exposed to the heat from the fire, is capable of heating a large volume of air. This size, it is claimed, has a capacity for carrying from 75 to 100 feet of radiation. In No. 2 both the top and bottom section, as shown in Fig. 2, are used in heating water and are rated for carry-



The Popular Hot Water Fire Place.—
Fig. 1.—Plan View at Grate.

ing from 150 to 200 feet of radiation. In No. 3 the fire surface of the grate is increased so that a capacity for carrying from 200 to 250 feet of radiation is claimed for it. All sizes are arranged for using 1 1/2-inch flow and return pipes. In this construction all the advantages of a grate as a means of ventilation are claimed and the positive heat from direct radiation is realized, and by means of the water circulation the heat can be distributed as desired. It is further mentioned that these grates can be set and used in connection with either steam or hot water heating plants, connecting the same as with ordinary radi-

ators. The grate is intended for private residences, public buildings and school houses, where it is said to change the air in the room as often as twice an hour, and, through the circulation of the heated air which enters, all parts of the room are kept equally warm. In describing the apparatus the point is made that there is no ventilation in a flue unless it is heated, and that the use of one of these grates makes an excellent assistant to an overtaxed hot water system, affording both additional heat and positive ventilation. For use in houses

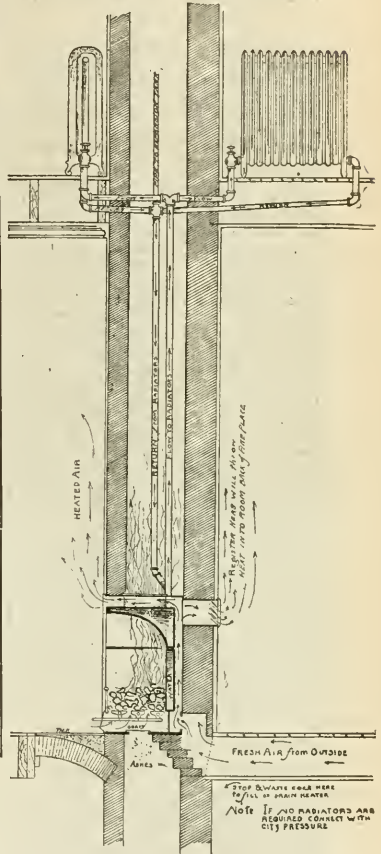


Fig. 2.—Sectional View with Radiators Connected.

where there are steam or hot water heating plants in the spring and fall, before the larger apparatus is started, the grate is said to possess special advantages. The claim is made that a large percentage of the heat generated from the fuel is realized by this system of grate heating.

AN ORDINANCE has been introduced in the Philadelphia City Council authorizing the Pennsylvania Heat, Light & Power Company to lay conduits and to use any street or alley in the city not actually occupied by a street passenger railway, and whose width does not exceed 40 feet, except to cross such streets, or to use them longitudinally where it is necessary in order to construct a continuous line. The com-

pany agree to furnish heat free to all police and fire stations, and at the city's request to any city building at a cost equal to the cost of the fuel used during the preceding year. A letter which accompanies the ordinance gives the incorporators as William B. Page of Albany, Robert Revesa, C. N. McKinney and John Taylor of Scranton, and James E. Hayes of Camden.

Hot Water Heating.*

BY JAMES MACKAY OF THE AMERICAN BOILER COMPANY.

I am pleased to be with you at this, the opening meeting of your proposed course of lectures upon practical subjects. Having gained some experience from many years of close and intimate acquaintance with the tongs and with the stocks and dies, and having passed through the various stages of steam fitter's helper and worked for years as a journeyman steam fitter, I feel, as I stand before you this evening, very much at home among you.

You no doubt are aware that I am expected to give a short talk upon hot water heating, which, if treated exhaustively, is a subject that involves a great deal more than can be even briefly outlined in the short time at our disposal. From a practical standpoint, however, we may, with profit, go over its record and its history; take up its different methods of practical application; trace its various stages of progress and improvement, step by step, from the earliest time at which we have any authentic record of its use up to the present time, when we find it one of the most important factors in the heating business of our country.

There are in the United States today over 10,000 men actively engaged in the sale, manufacture and erection of goods used exclusively in hot water heating, such as heaters, radiators, radiator valves, air valves, union elbows, expansion tanks, pipe, fittings, pipe hangers, floor and ceiling plates, bronzes and enamels, and when we realize that ten years ago there were not 500 men so engaged, an idea of the growth and present importance of the industry may be obtained.

The Most Ancient Apparatus.

In ancient Rome, over 1800 years ago, hot water was employed as a means for supplying artificial heat, and traces of its use for the same purpose are being at the present time unearthed from the ruins of the buried cities of Pompeii and Herculaneum. The only difference between modern practice and that of our ancient brothers is that we use iron while they used brass pipes arranged in coils, substantially the same in form and pattern as they are built by us today.

Now, while we have no positive or authentic records to show that this system of heating was used continuously or from time to time in some part of the world between the first and the eighteenth century, still it is reasonable to suppose that such was the case. In any event, we know that hot water was used in France about the year 1777 for heating incubators and brooding houses, and it appears at that time to have developed a high degree of efficiency, for it attracted considerable attention, was adopted and success-

fully used for heating purposes by several of the most prominent and practical men of that day.

Early English Heating.

From France, hot water heating found its way to England, and prior to the year 1825 was quite extensively used for heating greenhouses, conservatories and dwellings of the better class. From this time on it grew rapidly in popular favor, and was used for heating all manner of public and private buildings. Various systems of piping were employed, some of them good and some bad; but out of this experimental practice grew our modern knowledge of the subject.

One of the first arrangements of circulating mains of which we have any detailed or accurate description was a single main 3, 4, or 5 inches in diameter, ascending from the top of the heater, and from this the different branches were taken to supply coils located in different parts of the building. Each coil had one connection only, practically the same as a steam radiator is connected to-day. It was expected that the hot water would flow along the top of the main into the coils, and that the cold or return water would flow along the bottom of the connection into the main, thence along the bottom of the main into the top of the heater. This arrangement was speedily improved upon by adding a second or return connection to each coil, and connecting them with a second main, which was in turn connected with the bottom of the heater, thus providing a separate flow and return main, and producing what is now known as a two-pipe hot water job. It may be safely said that all our modern systems of piping were evolved from efforts equally as crude.

The heaters used in those early days were nearly all made of pipes, fitted in the shape of coils into furnaces of various forms, some of them being built of bricks, while others were incased in iron shells or jackets. The coils themselves were made of wrought iron pipe and sometimes of cast iron or copper. In all cases they were made exceptionally heavy and strong and were tested to very high pressures.

High Pressure System.

This precaution was very necessary, as almost all of the work was put in upon what is now known as the "high pressure" or "closed tank" system. The expansion tank was located, as it now is, at the highest point in the system, but instead of providing a safety valve or fusible plug as a factor of safety the apparatus was filled with water from the top of the expansion tank, and as soon as the desired height of water was obtained a plug was screwed into the opening, and the entire apparatus tightly sealed up. The temperatures carried in the water under this arrangement varied from 230° to 350°, and those temperatures were uniform, or nearly so, throughout all parts of the system. The pressure maintained was also very high, and great trouble was experienced in keeping the joints tight. This system of heating served its purpose well, however, and continued to grow in public favor. The piping and other details of the work were continually being simplified and improved upon. The open expansion tank system was also introduced, and it proved very satisfactory and efficient, until, at length, about the year 1850, what was considered a high degree of excellence was attained.

Introduced in America.

About this time the system was introduced into America and was used more especially throughout the colder sections of the country for heating greenhouses. In the provinces to the north of us, owing to the extreme cold climate, it grew in great favor and was used for heating all kinds of buildings, especially large public structures and greenhouses.

My first introduction to the business was as a helper upon a large greenhouse job. The boiler, or heater, was what is known as a "Saddle Back." It was made of wrought iron and was set upon a brick arch or fire chamber. This type of boiler has long since practically fallen into disuse, though some manufacturers are still offering it for sale. The heating surface placed in the greenhouse itself was 4-inch cast iron pipe of the usual pattern. The joints were put together with rubber rings, which fitted tightly around the end of the pipe, and were thick enough to fill up the hub of the next length when the end and the hub were brought together. This made a water tight joint which was easily put together or taken apart; it was also fairly durable. One lineal foot of 4 inch pipe to each 24 square feet of glass was put in. This proportion proved ample to maintain a temperature of 60° in the house when the outside temperature was 15° below zero. I never knew what temperature was maintained in the water of this apparatus, but as it was an open expansion tank system and the tanks were located only a few inches above the heating pipes, the temperature in the water could not have been high.

Water Tube Boilers.

At this time a great many water tube boilers were used. They were made of 1½-inch extra heavy wrought iron pipe put together with heavy gray cast iron fittings, and were of various forms and sizes to suit all manner of conditions. One of the most popular and efficient constructions was a boiler made in the same way as an old fashioned box coil. It was put together with open pattern return bends, and was brought together at the top and bottom by large headers or branch tees connected with right and left threads in the usual way. This boiler was made from 30 to 36 inches wide, 6, 8, or 10 feet long and about 4 feet high; the dimensions varying according to the capacity required. As it had a large amount of surface exposed to the direct action of the fire, and as almost all of this was horizontal or bottom surface, which the rays of heat, gases and other products of combustion came in contact with at right angles, it developed a very high rate of efficiency. However, it was hard to clean, and being incased in brick work, was difficult to get at for repairing.

Other Forms of Boilers.

Tubular boilers were also used. They were the familiar tubular construction, except that they were filled up with tubes to within three or four inches of the shell. In practice this construction was not found as efficient as the water tube boiler. This was owing to the limited amount of direct fire surface and the large amount of flue surface. In order to make the tubes or flue surface effective, the grate surface had to be increased to such an extent that it was out of all proportion to the requirements as represented by the radiation, and in many cases the bottom rows of tubes were not effective. Then, again,

* Read before the Steam Fitters' Protective Association, at Chicago, February 18, 1895.

if for any reason it was necessary to force the fire, the gases escaping into the chimney were at a very high temperature, representing considerable loss. It was also found that these boilers rusted out very rapidly during the season when they were not in use; and with light firing that the circulation in them was sluggish. While this type of boiler is still to a certain extent in use, it cannot, in my opinion, be said to represent the best practice. Other boilers were constructed of cast iron in various forms, all on the sectional principle. Some of them were quite effective, while others had grates altogether too large for the heating surface over them. The poor ones were sifted out and cast aside, while those possessing merit survived. But it is a strange fact that at the present time we find manufacturers who ought to be better informed rehushing some of the old cast aside types of sectional boilers and putting them upon the market as new constructions, only to have them fall by the wayside as time goes on. To be properly proportioned for hot water heating a boiler—or to be more correct, a heater—should contain from 60 to 75 per cent. of direct fire surface and from 25 to 40 per cent. of flue surface. In small heaters, say up to 4 square feet of grate, there should be 1 square foot of grate to every 20 or 25 square feet of heating surface.

Proportioning Boiler Surfaces.

In large heaters, up to 8 or 10 square feet of grate, the proportion can be much larger, say 1 square foot of grate to every 30 or 35 square feet of heating surface. The value of heating surface in its relation to amount of radiation supplied depends a good deal upon its arrangement in the heater and the way in which it is presented to the action of the fire and gases. With ordinary efficient surfaces, the grate area being proper, 1 square foot of heating surface in small heaters will take care of from 6 to 8 square feet of radiation, and in large heaters, from 10 to 15 square feet. Some years ago we used in lieu of modern radiation box and wall coils of various shapes. You are all familiar with their construction, and I have no doubt have put in many hard days' work making and testing them. It is in this particular branch of heating that great improvements have taken place. The modern cast iron vertical sectional radiator, being neat, compact and ornamental, is more in keeping and will harmonize better with a modern interior than the old style coils, though I think the latter more effective, foot for foot, than the former. For hot water heating efficient plain surface radiation only should be used. Extended surfaces are expensive and inefficient, and should not be used, especially if the apparatus is to be operated at a low temperature.

Kinds of Radiation.

There are three kinds of radiation in common use—viz.: Direct, indirect and direct-indirect. The last two named are used more especially for ventilation. In apportioning the amount of radiation required for any given exposure account must be taken of the temperature at which it is proposed to operate the apparatus, bearing in mind that the lower the temperature at which proper results can be obtained the better will be the quality of the heat and the greater the economy of fuel. I should recommend that a hot water heating apparatus be capable of maintaining a temperature of 70° during coldest weather, with a temperature in the water

not to exceed 160°. Under those conditions a larger amount of radiation would be required than if a higher temperature were carried, but it would be more satisfactory to all parties concerned. The outside wall and glass exposures in any room or building exert the greatest influence in lowering the temperature therein, and for this reason they should be considered as the most important factors in apportioning radiation. The cubic contents also must be considered and good judgment used to ascertain how many cubic feet of air will have to be warmed per hour due to the change of air that may be effected through properly provided channels or through badly fitting doors and windows.

Apportioning Radiation.

The wall surface may be reduced to its equivalent in glass surface and the whole figured as so much glass, or each factor may be treated separately. The latter plan I consider best. In apportioning direct radiation to a given room, in which it is intended to maintain a temperature of 70°—and in the water of the heating apparatus, a temperature of 160°—it has been my experience that 1 square foot of radiation to each 60 cubic feet of contents, 1 square foot to each 2 square feet of glass and 1 square foot to each 8 or 10 square feet of outside wall will do the work properly. Great care must be exercised in judging as to the exposures, construction of the walls and fitting of doors and windows, together with any local conditions which might affect the result, and due allowance made. If a temperature of 200° be carried in the water the radiation may be decreased about 20 per cent.

To ascertain the amount of direct-indirect radiation required for any given room, the usual method is to ascertain the amount of direct radiation required, and to this amount to add 25 per cent. I have found under these circumstances that each radiator should have a cold air duct of an area in the ratio of 40 square inches to each 100 square feet of radiation. This duct should be brought through the wall a little above or below the radiator, so that it will make a right angle turn before entering the base of the radiator. It should also be accessible for inspection and cleaning purposes. Air can be delivered through a direct-indirect radiator at a velocity of about 3 feet per second.

Indirect radiation is usually apportioned by adding 50 per cent. to the amount of direct radiation required. This calculation would answer if wrought iron surfaces were used, but it is entirely inadequate for heating purposes if cast iron indirect radiation, taken at its commercial rating, is used. In such a case I should recommend increasing the amount required for direct radiation 100 per cent.; then the amount will not be found any too liberal.

Size of Air Ducts.

The warm air ducts from indirect radiators, if discharging upon the first floor, should be as near as possible 1½ square inches in area for each square foot of radiation in the radiator to which they are connected. If discharging upon the second floor, 1½ square inches in area to each square foot of radiation should be provided, and 1 square inch in area to each square foot of radiation if discharging upon the third floor. The cold air duct should be from 25 to 33 per cent. smaller than

the warm air duct, and the radiator should be so incased that all of the incoming air will pass over every inch of the heated surface. There should be an air space above and below the radiator, that above being at least 20 per cent. larger than that below, and the lower space should not be less than three times the area of the cold air duct. The warm air should be discharged on the opposite end from that at which the cold air is admitted.

There is another factor governing the sizes of direct and direct-indirect radiators, upon which we have not touched—that is, as these radiators heat entirely by convection, warming the air to a given temperature, a certain quantity of air will be required to produce certain results, either in warming or ventilating. Under known conditions, the velocity of the air passing in at the air duct can be calculated, and the duct so proportioned as to deliver the proper quantity of air; then the radiating surface must be apportioned according to the amount of air it will warm per hour, regardless of its relation to the direct radiation, as before described. One square foot of indirect radiation at a temperature of 160° will heat 87 cubic feet of air per hour from zero to 70°. In order to attain this efficiency large amounts of air must be passed over the radiator. In large rooms where the air is changed from four to seven times per hour, even better service can be obtained. Indirect radiators should be arranged in groups as compactly as possible, and in connecting them with the mains they should be favored so as to maintain proper circulation with light as well as with heavy fires. A properly erected hot water heating apparatus, on heat being applied at the base of the column of water, will circulate uniformly throughout the system of piping and radiation. This circulation is due to the cold column of water descending and displacing the heated water, which ascends through the piping into the several radiators, where it is cooled and returned to the source of heat. The point at which the return mains are connected to the heater should be the base of the column of water, and the point at which heat should be applied.

Systems of Piping.

There are many systems of piping in use, and experience has taught us that they are all good under some conditions. The two-pipe system is possibly better known than most of the others. It consists of two mains—a flow and return. Sometimes they are carried direct from the heater to the different divisions of the work, and in such cases small pipe is used. At other times two large trunk mains are used, from which branches are taken to the different parts of the building. In this system the mains usually ascend from the top of the heater, rising about 1 inch in 8 feet, although it is quite common to cause the flow mains to descend from the top of the heater, venting the high point into the expansion tank. In such cases the extreme end of the flow main is connected through a small pipe into the return opening of the heater, and the return main commences at the point where the first connection is taken from the flow main and runs parallel to it around the basement, receiving the return connections in the order in which they are supplied from the flow main and returning them to the heater in the same order—i. e., the first radiator supplied is the last returned to the heater, and the last supplied is first returned. The size of the

main is governed by the amount of radiation supplied. If it is long and exposed, 1 square inch in area should be allowed for each 100 square feet of radiation. If short and compact, the area of a 1-inch pipe will be found sufficient for every 100 square feet of radiation supplied.

When very large mains are used, trouble sometimes occurs through internal circulation in the main itself, and for this reason I would recommend that nothing larger than 5 or 6 inch pipe be used in any main. If greater area is required than this will afford, divide the work and use two or more 5 or 6 inch mains.

Overhead Piping.

The overhead system of piping is also much used. With it all of the water is carried in a large riser to the top of the building, where the main is distributed to different parts of the work, and descends to the basement through single drop mains called risers. The radiators are placed, as far as practicable, immediately above each other, so that they can be conveniently connected to one of these drop mains, both flow and return connections being at the same end of the radiator, the flow at the top and the return at the bottom; both are connected to the same drop main. No air valves are required, as all air is vented through the top connection of the radiator into the riser. The horizontal mains diverging from the top of the main riser descend about 1 inch in 10 feet, thus making this point the highest in the system of piping. Above it is located the expansion tank, connected with an expansion pipe from the bottom of the tank into the side of the most convenient horizontal main. A vent pipe is also taken from the extreme highest point in the main and connected with the side or top of the expansion tank above the water line. By this arrangement all air from the system is discharged into the tank.

It is not a bad plan, especially if the tank is located only a short distance above the main, to put it under a slight pressure and maintain an air cushion in it. Years ago it was the custom to govern this air cushion by a common ball cock, sometimes placed in the tank and at other times cased up at the side of it. In appearance it was not unlike an automatic water feeder. Of late years, however, automatic air valves have been used for this purpose, but it cannot be said that they properly answer the purpose or that they are reliable. In the basement the risers are connected into the side of the return main, which is carried around the basement and connected with the bottom of the heater. The area of the main in all its parts should be equal to the area of a 1-inch pipe for each 100 square feet of radiation supplied. Radiators may be tapped $\frac{1}{4}$ inch up to 40 square feet, 1 inch up to 70 square feet, $1\frac{1}{2}$ inches up to 125 square feet; larger than this, 2 inches.

Single Circuit System.

One of the oldest systems of piping used for hot water heating is known as the single circuit or one pipe system. It is exceedingly simple, and where suitable is very effective. It consists, as its name implies, of a single main, which, starting from the heater, is carried vertically as high as the ceiling will permit, then turned and carried as a horizontal main around the basement in a continuous circuit, having its highest point where it leaves the vertical pipe, and descending about 1 inch in 10 feet until it reaches a point

immediately at the rear of the heater, where it drops and is connected with the return opening of the heater. If the heater is located in a position that is central to the work, two circuits may be taken from the vertical pipe and carried in opposite directions around the basement. Flow connections to radiators and risers are taken from the top of this main, and return connections brought into the side of it.

The expansion pipe from the bottom of the expansion tank should be connected with the bottom of the heater, and a circulating pipe taken from the top of the highest point in the main and connected to the side of the expansion tank below the water line. The size of the main for this system should not be less than 1 inch in area for each 100 square feet of radiation supplied, and it should not be reduced in size at any point. Air valves are necessary on all radiators. Up to 50 square feet radiators may be tapped 1 inch; up to 100 square feet, $1\frac{1}{4}$ inches; up to 200 square feet, $1\frac{1}{2}$ inches; larger than 200 square feet, 2 inches.

In all work due provision must be made for expansion and contraction. To my mind a square elbow from the top of a main to lateral branches compensates better for expansion than a 45° elbow.

In the class of work under discussion theory furnishes us many valuable lessons, but I think one pound of practice is worth ten pounds of theory, and you, gentlemen, who are actively engaged in the practical details of the work have more and better opportunities to acquire a thorough knowledge of the art than any who depend upon books and theory entirely.

James D. Mowry.

James D. Mowry, for the past 15 years president of the W. H. Page Boiler Company, died at his residence, 356 Broadway, Norwich, Conn., last week, after a sickness of several weeks. He was an old and respected citizen and had in his long and memorable life been identified with many local enterprises. He had been agent of the Chelsea Mills and of the Rockland Mills prior to 1865. He started the Mowry Machine Company, was for years secretary of the Page Wood Type Company, and finally their president. In 1857 he took an active part in arranging for the bi centennial celebration of the settlement of the town, and was a member of two committees that contributed to the success of that memorable event.

He was a loyal citizen and during the dark days of the Rebellion did what he could to promote the cause of the Union. At the opening of the war he was a member of a committee for the raising of a war fund. In 1862 he contracted to furnish the Government with 30,000 rifle muskets of the latest Springfield construction. The barrels were made at Cole & Walker's, Franklin street, the locks by C. B. Rogers & Co., and the other pieces at Mowry's factory in Greenville. In 1854 he was the leader in the movement to connect Greenville and Preston with a bridge, and as the result of his labors witnessed the erection of the first bridge across the Shetucket River at that point.

He was a member of Somerset Lodge No. 34, F. and A. M., and a member of the Elms Club. He was a man of kindly disposition and pleasing personal qualities, and was highly esteemed by those who knew him. Mrs. Mowry, his daughter, Mrs. Frederick T. Mason, and his son, Col. William C. Mowry, survive him.

HEATING NOTES.

THE McCORMACK STEAM HEATING COMPANY, Wallingford, Conn., lighted their building with electricity last week for the first time. The plant was put in by the Standard Storage Battery Company of Northford and is said to give satisfactory results.

SAMUEL BURNS was a caller at *The Metal Worker* office this week. Mr. Burns is secretary and manager of Thomas W. Weathered's Sons, 139 Centre street, New York, manufacturers of hot water boilers and greenhouse constructors.

A PATENT has been granted to C. A. Ball, Washington, D. C., for a radiator so constructed that only such proportion of the radiating surface may be used as is necessary for the work, special valves and diaphragms securing the result.

THE CONNECTICUT STATE BOARD OF HEALTH have adopted a plan for ventilating the State Prison and the work of installation will be done by the inmates.

In commenting on heating greenhouses, using gas for fuel in a hot water heater, Thomas Fletcher makes the following statement in an English journal: "A span roof house, protected from winds, size 20 feet square, 12 feet to ridge, required, in one year, a total gas consumption of 34,000 cubic feet to maintain a minimum of 45° with a hot water system. It is quite out of all question to expect to heat a good sized conservatory with gas for anything approaching three times the cost of coke. Under equally good conditions as regards economy, 1 pound of good dry coke is equal to 19 cubic feet of 18 candle gas, and at the prices paid here—i. e., 4 shillings (\$1) per 1000 cubic feet, this quantity of gas would cost 1 penny. At its present price, 13 shillings (\$3.25) per ton-coke would cost one-fourteenth part of this, and although in practice the figures would come out much more favorably for gas fuel, the difference would still be prohibitive, except on the small-est scale."

GEORGE C. BLACKMORE of the United States Radiator Company, Sillsburg, Pa., called at *The Metal Worker* office this week.

THE Vosburgh cast iron patent adjustable floor thimble and ceiling plate combined is the subject of an elaborately decorated poster issued by the N. O. Nelson Mfg. Company, St. Louis, Mo., who make it. The poster, measuring 11 x 15 inches, is printed in colors and in a circular panel in the middle is a view of the Vosburgh thimble in place. The only text relating to it is: "No argument is necessary. It speaks for itself." On the back of the poster are prices of the No. 1 and No. 2 sizes. The former has a range of from 9 to 16 inches and the latter of from 15 to 22 inches. The device is made for all sizes of pipe from $\frac{1}{4}$ to 4 inches.

THE JOHN W. MILLS COMPANY, 100 Lake street, Chicago, are to move to 93 on the same street, having secured a portion of the showroom occupied by the Niagara Radiator Company.

C. B. MATTESON, manager of the Chicago office of the J. H. McLain Company, has resigned his position with the above company, and is to enter the employ of the American Boiler Company as city salesman.

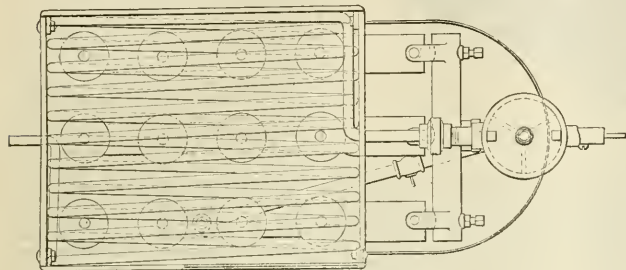
PLUMBING and GAS FITTING.

Clarke's Instantaneous Water Heater.

Those who cook with gas and others who require hot water, particularly in summer, will be interested in Clarke's instantaneous water heater, the patents for which are controlled by the Gilbert & Barker Mfg. Company, 82 John street, New York, who are just putting it on the market. It is designed to completely take the place of the range water back and kitchen boiler. It may

under the piston will vary with the pressure of the supply on different floors of a building, a counterpoise is furnished which can be set at any required point on the valve lever to aid in closing the valve when a faucet is closed. The variation of quality and pressure of gas in different towns and on different floors of a building is anticipated, and needle valves are provided, which may be adjusted by hand when the heater is installed. By this arrangement a sufficient velocity and

is also pointed out that no large body of hot water is stored in a boiler to give an uncomfortable temperature to the apartment in summer. It is claimed that it is far more economical to heat the water wanted as it runs and then stop the use of fuel than to store a quantity of boiling water to waste a large percentage of its heat continually. The comfort derived from cooking by gas in summer has led to many kitchens being heated by some other means than the cooking apparatus so that gas may be used in the winter. It is claimed that the difficulty in securing hot water under such conditions is overcome by the Clarke hot water heater.



Clarke's Instantaneous Water Heater.—Fig. 1.—Plan View.

be placed at any convenient spot in the cellar kitchen or elsewhere and connected with the cold water supply to the building. The hot water service may then be run the same as from a boiler to all of the fixtures in the house where hot water is required. It has been tested in connection with a water service carrying 125 pounds of pressure, with the water supply at 40°, and furnished water at 130° temperature at the rate of one gallon per minute. Fig. 1 shows a plan view of the heater with the heating coil with the burners under it and the controlling valve, which is one of the features of the heater. Fig. 2 shows a longitudinal sectional view of the heater and the valve construction. The general adaptability of the heater is largely due to the fact that gas is burned only when water is being drawn. The gas is turned on or off by the mere act of drawing water. The valve arrangement, shown in Fig. 2, is like a direct acting steam pump. At one end is a cylinder, containing a piston actuated by the flow of water. The water from the supply is admitted under the piston and taken out above it. When a faucet is opened anywhere on the hot service, whether it be close to the heater or hundreds of feet away, the flow of water instantly raises the piston. At the other end of the piston is arranged a direct acting gas valve which opens immediately on the piston being raised by the water and lets on a full supply of gas to the burners under the heating coil, where a pilot light instantly flashes the burners into use. The coil is made of 32 feet of $\frac{1}{4}$ -inch seamless drawn copper tubing and is placed in an iron case 12 inches wide, 15 inches long and 10 inches high. The heater is 30 inches long, including the valve, and stands 15 inches high.

Since the bind of the stuffing nut

quantity of gas is secured to induce a proper amount of air to enter the bell-shaped atmospheric burner chamber. The quantity of water drawn can be reduced by the user at the faucet, so that water at a much higher temperature than that mentioned can be obtained. By reducing the quantity drawn it remains in the heating coil over the burners a longer time. When

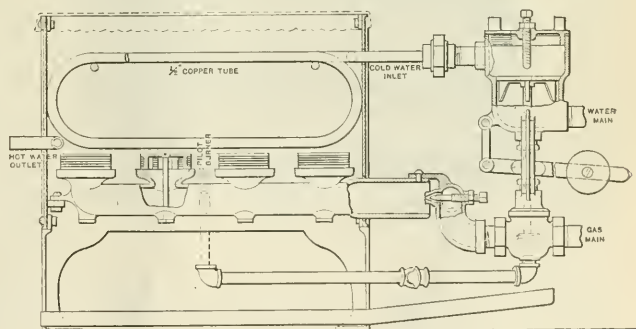


Fig. 2.—Sectional View.

used in public places, like barber shops, hotel washrooms, &c., the temperature and quantity of the water drawn can be regulated by placing a stop cock on the supply to the heater and setting it, as found satisfactory by experiment. The burner is divided into three sections, each having four flame jets burning 10 feet of gas apiece when the burner is in full operation. With this heater it is claimed that hot water can be secured promptly at any time of the day or night in such quantities as desired. It

Waterbury; Francis J. Reynolds, Ansonia.

THE MASTER PLUMBERS' ASSOCIATION of Augusta, Ga., held a meeting last week and was addressed on the subject of "Sanitary Plumbing" by Health Officer Christman. The latter invited a committee of the association to meet the Board of Health at its next meeting, and the Sanitary Committee, consisting of Lewis Willenbecher, F. E. Whitesell and E. B. Evans, was delegated for

Association News.

Connecticut Plumbers' Association.

President J. B. Weiant of the Connecticut Association of Master Plumbers has appointed the following committees for 1895:

Sanitary Committee: Robert Morgan, New Haven; F. A. Curtiss, New Haven; H. B. Middlebrook, Bridgeport; John M. Page, Naugatuck; S. H. Beard, New Britain.

Legislative Committee: J. S. Craig, Hartford; James Ahern, Hartford; James F. Duffy, Hartford; James Donovan, Middletown; Lyman D. Mills, Middletown.

Essay Committee: L. H. Mills, Bridgeport; A. Troland, Norwich; J. G. Shearlock, New Haven; Wm. Vanderman, Willimantic; G. W. Washburn, Danbury.

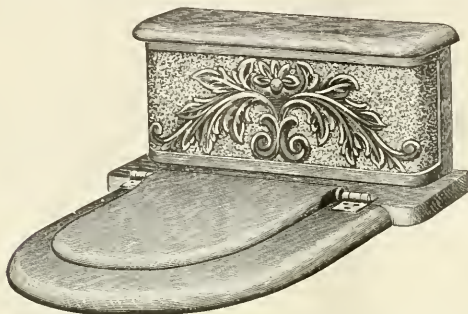
Apprenticeship Committee: S. E. Dibble, New Haven; Thos. D. Barlow,

this purpose. The Plumbers' Association has become a member of the National Association of Master Plumbers, has adopted a constitution and by-laws and will hereafter meet in Seagreaves' Hall, North Sixth street.

A NUMBER of Nebraska plumbers met recently at Lincoln and organized the Nebraska Master Plumbers' Association. The following officers were elected: President, James H. O'Neill, Lincoln; vice-president, John Rowe,

High Grade Closet Fixtures.

Our illustrations show some of the many high grade seats and tanks for water closets, made by the Pfau Mfg. Company, 138-142 Huntstreet, Cincinnati, Ohio. Fig. 1 shows the hand carved closet seat, and Fig. 2 the Roman pattern flush tank. These fixtures are furnished in different woods, light and red cherry, natural and antique oak, ash and walnut, all of which are made with a high grade



High Grade Closet Fixtures.—Fig. 1.—Showing the Hand Carved Closet Seat.

Omaha; secretary, H. H. Gaffey, Lincoln; treasurer, B. C. Humphrey, Fairbury.

JOHN MITCHELL, president of the National Association of Master Plumbers, will respond to the toast "The National Association" at the banquet after the convention of the New York State Association of Master Plumbers, at Troy, N. Y., next week.

NEW YORK CITY will send a delegation of 14 plumbers, headed by President McDermott, to the State conven-

tion, being water rubbed and given a piano finish. The closet seat is furnished with a back handsomely carved by hand and has finely nickle plated hinges. It can be supplied with or without the seat cover as preferred. The flush tank is provided with heavy polished or nickle plated brass brackets and a fine chain and pull. The tanks are made in three sizes, No. 0 being used as automatic tanks, No. 1 for use with washout and hopper closets and No. 2 for siphon jet closets. Several different styles of valves are mentioned

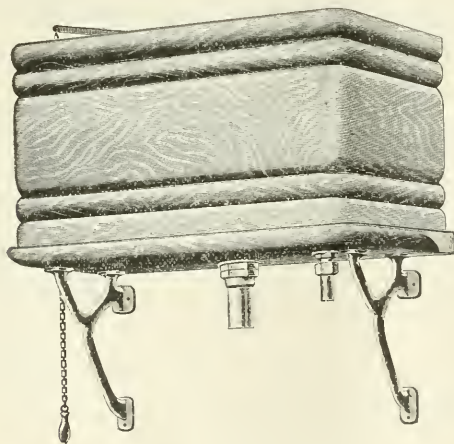


Fig. 2.—Roman Pattern Flush Tank.

tion of master plumbers at Troy, N. Y., on March 5 and 6.

BIRKERY MFG. COMPANY, Hartford, Conn., manufacturers of the well-known Birkery ball cock, are distributing to their friends a very neat pocket match safe made of seal leather, and they advise us that any master plumber who may have been unavoidably overlooked and will send them a postal card will receive one by return mail.

as adapted for use with the tank from which the plumber can make a selection.

A NEW and attractive business sign now appears over the door of 129 Beekmanstreet, New York, which announces that A. Keller is conducting the business of stoves, French ranges, plumbing, steam and gas fitting, he having bought out the interest of his former partner.

TRAPS AND VENTS.

THE New York *Tribune* suggests that there exists a need for a water insurance company, to insure against damage done by bursted water pipes, whether caused by freezing, poor material or natural wear and tear.

BROWN BROS. have leased a store in the Barnard Block, Saginaw, Mich., which they will use for a plumbing establishment.

GEORGE MORLIDOE has opened a plumbing shop at 633 York street, Newport, Ky.

JOHN A. JACOBSON is building a plumbing shop for Curran & Murray, at Baker and School streets, Morton, Pa.

ROBERT CLARK and THOMAS ELDER are preparing to open a plumbing establishment in the basement of the Howarth Building, on Seventh avenue, Beaver Falls, Pa.

WM. C. LOVE, Haverford, Pa., sustained a loss in his plumbing shop by fire of \$2500, partly covered by insurance.

GEORGE F. HICKMOTT, for a number of years connected with the plumbing and metal trades and for sometime past a dealer in plumbers' specialties and sheet metals at 152 Federal street, Boston, Mass., has associated himself with the Birkery Mfg. Company, Hartford, Conn., and will continue to visit the trade in the interest of the Birkery ball cock and several other specialties with which he has been identified. Mr. Hickmott is well and favorably known in this line and will have a hearty welcome in his new capacity.

COUNCILMAN TIMOTHY BRONSFIELD has opened a plumber's shop on Delaware street, between Fifth and Sixth streets, Leavenworth, Kan.

A LAW putting plumbing under the control of the Board of Health has been presented to the Legislature of the State of Delaware.

JOHN H. CABEEN, 88 Church street, Boston, Mass., had his plumbing establishment flooded by water thrown on a fire in an adjoining building.

T. F. BOHAN, Little Falls, Minn., has moved his plumbing shop to First street.

R. E. HARRIS has purchased the old electric light building on East Calhoun street, Macomb, Ill. He will move his present building to the rear of his new purchase and occupy the entire space as a plumbing and steam fitting shop.

R. T. ALLEN, Bangor, Maine, has sold one half interest in his plumbing business to Robert D. Linn of Old Town.

ABEL P. RANDALL, Westerly, R. I., for many years with Robert Drysdale, will begin the plumbing business for himself March 1.

AT THE ANNUAL MEETING of the Bridgeport, Conn., Builders' Exchange, Zalmon Goodsell was elected president and Lucius H. Mills treasurer. Among the other members of the exchange who are plumbers are C. S. Eames, M. W. Manswring, Edwin A. Creevey, F. & F. C. Booth, John Kearns, E. Lynch, Pierce Mfg. Company, Green & Logan, Wheeler & Cook, H. B. Middlebrook and Donahue & Bertillon.

THE BRIDGEPORT STEAM HEATING COMPANY, Bridgeport, Conn., are a well equipped plumbing supply house and have a large warehouse. They carry a

complete stock of water closets, urinals, bathtubs, lead pipe, drain pipe, steam and gas fittings, &c., and cut pipe to sketch. A new boiler and engine have been put in to supply the power needed.

THE PLANT of the Sperry Sewer Pipe Company, Akron, Ohio, has been sold to Harry Thompson, of that city.

THE NEW YORK STATE SEWER PIPE COMPANY of Rochester, N. Y., were incorporated on February 25, with a capital of \$20,000. The directors named are W. H. Garoline, Ira L. Otis, Ed. W. Peck and Frank H. Kondolf of Rochester.

THE OPERATIVES on sanitary ware in the shops of the Trenton potteries are taking steps to resist the newly posted reductions in wages, which they say range from 25 to 50 per cent. A committee has been appointed to confer with the manufacturers in the hope that an agreement may be arrived at.

PLUMBER'S LICENSE has been taken out by William Nedvideck, 216 S. Third street, La Crosse, Wis.

The plumbing and heating establishment of Hulett & Hay, at No. 203 Sixth street, Racine, Wis., was visited by a \$200 fire recently.

THE KALAMAZOO PLUMBING & HEATING COMPANY have begun business at 111 North Rose street, in the Chase Block, Kalamazoo, Mich. Fred. Herman will have charge of the plumbing department, Andrew Frey of the steam heating and E. S. Shepard of the office and general supervision.

C. L. HICKS, Waterbury, Conn., had a \$1000 fire in his plumbing shop, which was covered by insurance.

DAVID J. McKEOUGH has tendered his resignation as plumbing inspector to Mayor Gibson of Utica, N. Y., to take effect at the pleasure of the Board of Health. Joseph Frank, at present assistant inspector, is a candidate for the vacancy, and it is understood that his chances for the appointment are good. Mr. McKeough and his brother Thomas F. have engaged in the plumbing, steam and gas fitting and hot water heating business at 41 Columbia street, corner of Broadway.

WALTER N. FOSS of Augusta, Maine, a practical plumber and steam fitter, has connected himself with the firm of Sturtevant & Haseltine of Pittsfield, Maine, and will attend to that department of their business.

WILLIAM BISHOP'S SONS, 205 South street, New York, publish an illustrated catalogue calling attention to the many specialties which they manufacture and handle. Particular attention is given to William Bishop's patent pump water closets for use in vessels, either above or below the water line. Various closets are shown, likewise other ships' fittings, such as pumps, sea cocks, basins, deck plates, &c. As an indication of the extent of their business, they mention that in the past year they have supplied fixtures for and done work on over 400 naval vessels, steamboats, ferry boats, pilot boats, steam and sail yachts, beside doing a good deal of house plumbing.

THE WELL KNOWN FIRM of Hughes & Stephenson, Montreal, Canada, after a very prosperous business career of 16 years in the plumbing and heating business, have dissolved by mutual consent. They succeeded Richard Patton on his death, and the business, therefore, has been carried on without interruption

for over 30 years. W. A. Stephenson retires from the firm and the business will be continued by J. W. Hughes, whose name will be familiar to our readers as a contributor to the columns of *The Metal Worker* for many years past. Mr. Hughes will have the valuable assistance of his son W. R. J. Hughes in carrying on the practical department. Mr. Hughes, Jr., besides having served a regular apprenticeship at the trade and worked for several years as a journeyman, has had the additional advantage of a course in the New York Trade School, and is thoroughly familiar with modern methods of plumbing and practical sanitation.

A SERVICEABLE ARTICLE for deck equipment, in the shape of a glass paper weight, is being distributed by the E. Stebbins Mfg. Company of Brighton, Mass. The paper weight is of glass and the possessor will have constantly before his eyes the reminder that when he has to do with plumbing work he should use Stebbins' Special faucets.

THE STRIKE of the workmen at the pottery of the Western Sanitary Pottery Company, Tiltonsville, Ohio, has been settled, the demand of the employers for a reduction of 25 per cent. on the sanitary pottery wage scale being withdrawn. The plant has been idle for some months, but about 3 weeks ago the management offered to resume operations if the men would accept the reduction referred to. The proposition was refused by the workmen, who went on strike. The plant is again in full operation.

UNDER the name or style of the Newell-Booth Company, Limited, A. T. Booth, for many years with the Haines, Jones & Cadbury Company, manufacturers of plumbing supplies, Philadelphia, and Wm. H. Newell, also for many years connected with the same concern, but latterly engaged in business on his own account as a manufacturer of plumbers' specialties, have commenced business in the same line at the corner of Broad and Buttonwood streets, Philadelphia, in the building lately occupied by the Hook Smelting Works. The upper portion of the building has been utilized for their foundry, finishing shops and stock rooms, while the ground floor contains their showroom and office. The company propose to carry in stock a full line of plumbing supplies, and will manufacture and introduce as soon as possible a few specialties for which their experience has taught them there is an opening. In a circular recently sent out to the trade the company pledge themselves to sell to the trade only. The new concern enter the market under favorable circumstances, and should very soon attain a prominent position in the business.

THE DAVIS & STEVENS MFG. COMPANY, Seneca Falls, N. Y., have just added a new specialty to their business in the manufacture of a new gas machine for regulating the burning of natural or artificial gas.

NOTICE is ISSUED to the trade by George F. Bishop and James G. Bishop that under the firm name of William Bishop's Sons they are carrying on the business established 35 years ago by their father, the late William B. Bishop. They have a branch store at 724 Third avenue, Brooklyn, and their main store and shop is at 205 South street, New York. They carry in stock a full supply of the latest marine sanitary specialties and fittings and are in position to do ship plumbing work of all kinds.

The firm are also coppersmiths and steam fitters. In the circular which they issue attention is called to the ships' closets which they have put in various boats, their No. 1 Naval Closet being used in the United States Navy, and they give a list of a number of ships in which they are employed. They also refer to other closets and mention the names of many well-known yachts and vessels carrying them.

B. T. STEWART of Skowhegan, Maine, has made arrangements to go into the plumbing business at Pittsfield, Maine.

A SIGN on the building at 5 East Nineteenth street, New York, proclaims that the Meyer Seiffen Company, Limited, will make a fine display of handsome plumbing fixtures as soon as the showrooms can be fitted up. Their line of modern sanitary goods has many attractions, and a visit to their exhibition, when completed, will doubtless prove pleasing and profitable to the plumber.

THE MASTER PLUMBERS' ASSOCIATION of Montreal, Canada, held their first annual banquet February 25 at the Queen's Hotel, about 150 members being present. The dinner was to celebrate the insurrection of the association and to emphasize its gratification at having received its act of incorporation. President Lamsarch filled the chair in a most able manner and in a characteristic speech, or rather speeches, for he spoke in both French and English, in acknowledgment of the toast to the association, gave an account of the aims and wishes of its members, which include the promotion of good plumbing, the furtherance of the public health and the education of the people to the necessity of proper sanitation. At the left of the chairman was Acting-Mayor Alderman Leclerc, who is himself a "knight of the ladle and cloth," and on his right was Alderman Beausoleil, chairman of the Board of Health, who in the course of an able speech promised the master plumbers the aid and co-operation of the board. Speeches were likewise made by representatives of the leading manufacturing and supply houses of the Dominion, who promised cordial assistance to the association. Music was a feature of the banquet that was much appreciated.

THE DOLLAR GAS BILL before the New Jersey Legislature has been defeated.

DATON & Co. of Clinton, Iowa, have arranged for opening a plumber's establishment at Savanna, Iowa. They have rented the Bowman Building and will do all kinds of plumbing, gas and steam fitting, and keep a full line of supplies of all kinds.

WILLIAM B. GILCHRIST has purchased the interest of his partner in the plumbing business at Wilkes-Barre, Pa.

THE BOSWORTH HEATING & SUPPLY COMPANY of Hartford, Conn., have changed their articles of association so as to enable them to deal in manufacturers' and engineers' supplies and all kinds of merchandise and machinery used by steam fitters, gas fitters and plumbers.

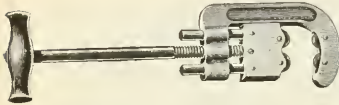
SAMUEL S. SINGLETON, a plumber and hardware merchant of Middletown, Conn., died last Tuesday of heart disease. He was 70 years old. He leaves a wife and one daughter.

DEAN WILSON, Chief Inspector of the Bureau of Plumbing, Buffalo, N. Y., says his crusade against plumbers

who had no license, or had failed to obtain a certificate of qualification, has been successful. He also says: "I don't want people to think that Buffalo plumbers are not as competent as any, for they are. They do as good work, generally, as is done in the United States, and the reputation of this city for good sanitary plumbing is excellent. The best plumbers, the leading men in the business, do all they can to assist in enforcing the regulations, and they greatly aid this department. If they didn't, we couldn't do the work cut out for us."

Four-Wheel Pipe Cutter.

The accompanying illustration shows a new form of pipe cutter brought out by the Vanderman Plumbing & Heating Company of Willmantic, Conn., and sold under the name of the Vanderman four wheel pipe cutter. The con-



Four-Wheel Pipe Cutter.

struction and operation of this tool are clearly shown in the illustration and no further description is necessary. The cutter is especially adapted for cutting cast iron soil and water pipe. It is made in three sizes, No. 1 being adapted to cut from 2 to 4½ inches, No. 2 from 2 to 6 inches, and No. 3 from 4 to 10 inches.

The Hornless Water Closet.

The accompanying illustration shows a new form of closet made without a horn. The coupling passes entirely through the closet rim to the inside of the closet. The threads are in the middle, the outside nipple and lock nut being in one piece, so the same length is always attained. The frequent break-



The Hornless Water Closet.

ing of horns is what led to the invention of the closet by Thomas Kelly & Brothers, 124 Franklin street, Chicago, Ill. The date of the patents which have been allowed in the United States and Great Britain and are about to be issued is March 5, 1895.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

AN OMNIBUS APPROPRIATION BILL before the Minnesota Legislature provides \$5000 for heating the Mankato School and also provides for the erection of two new school buildings.

BIDS will be received at the office of the Commissioner of City Works, Brooklyn, N. Y., until March 6, 1895, for plumbing work in connection with the alterations and repairs to be made in the offices of the City Hall now occupied by the Controller, Auditor and Board of Audit.

BIDS will be received at the office of the Commissioner of City Works, Brooklyn, until March 6, 1895, for furnishing and fitting up a steam heating apparatus in the Twentieth precinct police station house, &c., on the north-east corner of Hamburg and De Kalb avenues.

SENATOR PALMER has introduced a bill in the Connecticut Legislature to appropriate \$5000 for heating and ventilating the New Britain Normal School.

A LARGE RAILROAD DEPOT is to be built at La Junta, Col., which is to have a heating and a plumbing system.

GEORGE SAUNDERS, Andover, Mass., has received the contract for ventilating the Musgrove Block, according to plans laid down by the State Inspector.

THE CONTRACT for plumbing the F. A. C. Club House, Fitchburg, Mass., has been let to John B. Farnsworth of Leominster, who did the plumbing for Lockey & Mayo's new block in Leominster. The contract calls for annealed brass tubing throughout and provision is made for a continuous hot water circulation.

W. H. BARTHOLOMEW, New Haven, Conn., is to build a handsome residence to have a modern plumbing system and a hot water heating plant.

THE FOSKETT & BISHOP COMPANY, New Haven, Conn., have recently received contracts for placing Bolton hot water heaters in the residences of Hon. John F. Dillon, Far Hills, N. J.; C. A. Singer, Larchmont, N. Y.; Hon. W. Z. Larned, Summit, N. J.; Chas. P. Thompson and Geo. Stelzie, New Haven, Conn.

JAMES T. KAY, Meriden, Conn., is finishing up the heating of the new Center School. A new Economizer boiler, manufactured by the Porter Mfg. Company of Syracuse, N. Y., has been put in. Mr. Kay will also soon finish the plumbing and heating of the new Curtis Home. The plumbing is done in an elaborate manner, the best fixtures of the J. L. Mott Iron Works being used, with enameled baths and sinks, and everything in the most approved modern style.

KEEFE BROTHERS of Oswego have begun the work of heating and plumbing in the new hotel at Pulaaki, N. Y.

WHITAKER & DUNLAP, Littleton, N. H., have received the contract for the plumbing in the new school house.

The New Haven, Conn., town meeting, held last week, authorized the City School District, says the New Haven Record, to borrow a sufficient sum to make the amount available for new schools \$180,000—\$90,000 for the Grand Avenue School, \$80,000 for the

George Street School and \$10,000 for the enlargement of the Winchester School.

THE KALAMAZOO PLUMBING & HEATING COMPANY, Kalamazoo, Mich., have the contract for plumbing and fitting the new Craver Block.

THE PLUMBING CONTRACT for School No. 7, at Rochester, N. Y., has been readvertised owing to some misunderstanding of the original bidders. The alphen closet of the J. L. Mott Iron Works has been specified.

A MASCOT STEAM HEATER, made by the United States Boiler Company, Detroit, Mich., is being put into the Ursuline Academy, at Santa Rosa, Cal.

THE HEATING APPARATUS at Hanover Park, Meriden, Conn., by which both the Casino and the merry-go-round buildings are heated, has given the most satisfactory service during the severe weather of the past few weeks. Both buildings are heated with steam. The plant was installed by Taylor & Taylor of Meriden, Conn.

A. D. WARD, Augusta, Maine, has completed the plumbing and heating plant in the Hill, Macomber & Wright Block.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until March 23 for work, including the roof construction and roof covering for the United States Court House, Post Office and Custom House at Sioux City, Iowa. Drawings and specifications may be had from the Supervising Architect, Washington, or from the Superintendent at Sioux City.

THE L. H. PRENTICE COMPANY, 203 and 205 Van Buren street, Chicago, are to install a steam heating and power plant in the Mooney & Brisbane Building, at Main, Washington and Clinton streets, Buffalo, N. Y.

THE CHARLES H. SIMMONS COMPANY, 72 Market street, Chicago, have the contract for steam heating in the tenth to thirteenth floors of the Y. M. C. A. Building, 153 to 157 La Salle street.

KROESCHELL BROS. COMPANY, 41 to 59 Erie street, Chicago, have the contract for steam heating in the flat building of Philip Blinn, North avenue, between Wells street and La Salle avenue.

THE SMITH & ANTHONY COMPANY, 219 Lake street, Chicago, have the contract for warm air heating in the flat building of Dr. Crissman, North Clark street.

SMITH & DONEY, 1045 North Western avenue, Chicago, have the contract for the plumbing and drainage in the flat building of W. Bubonon, Elston and Redfield avenues.

FRANK J. RUH, 1204 Diversey street, Chicago, has the contract for the plumbing and drainage in the residence of L. Mallern, 587 Orchard street.

JOHN WATSON, 1284 South Trumbull avenue, Chicago, is to do the plumbing and sewerage in the flat building of James Crosby, 1095 South Oakley avenue.

WILLIAM READ, 345 Forty-third street, Chicago, is to do the plumbing and drainage in the two store and flat buildings of C. Fiend, Fifty-first and Justine streets.

JAMES J. DOYLE, 6040 South Halsted street, Chicago, is to do the plumbing and drainage in the flat building of A. Smith, 3232 Fifth avenue.

TIN PLATES.

Is Overproduction in Sight?

A well informed correspondent in one of the Western States, who is largely interested in the American tin plate industry, has favored us with his views in regard to the prospects before the manufacturers of tin plates in this country. He gives as his impression, based upon rough calculations of productive capacity and consumption, that by the end of the current year the domestic manufacturers will have to face a strong home competition, caused by an overproduction of about 30 per cent. This theory is sufficiently startling at this early stage in American tin plate making, and it is deserving of some consideration.

The premises from which our correspondent deduces his statement, as given by him, are briefly these: The total consumption of tin plates in the United States is 6,000,000 boxes a year. The Standard Oil Company, the largest individual consumers, use 900,000 to 1,000,000 boxes a year, upon which they are allowed a rebate of 99 per cent. of the duty. This places them beyond the reach of the American manufacturer. The Pacific Coast trade amounts to between 500,000 and 1,000,000 boxes a year, which the Americans cannot touch on account of freight rates, the English manufacturers being able to ship so much cheaper by water. The dressed beef men who ship abroad are also entitled to 99 per cent. rebate on their shipments of foreign material, and they prefer buying foreign tin, owing to the fact that having both foreign and domestic tin plates in their factories would necessitate so many certificates, oaths, &c., to convince the Government that they are consuming imported tin only for their export business that they prefer to use foreign material altogether. Thus, all told, there are at least 2,000,000 boxes of tin plates consumed here every year which, it is argued, will always belong to the Welsh trade; at least until the conditions in this country approximate those obtaining on the other side. Accordingly, he estimates, only 4,000,000 boxes, in good years, are left to be fought for by American manufacturers.

Our correspondent calculates that there are at present mills enough in operation and in process of erection to make from 5,000,000 to 6,000,000 boxes per year. Consequently, he concludes, by the end of this year, the American manufacturers will have to face a home competition of an overproduction of 30 per cent. With this

in view, he sees nothing encouraging to our domestic tin plate makers in the outlook, even if the building of new tin plate plants does not go beyond those already under contract.

It is difficult to estimate with any degree of accuracy the aggregate capacity of the tin plate works now in operation or in course of erection in this country. But, so far as we have been able to judge from a necessarily rough calculation, based upon reports of the proposed capacity of the new works now in process of construction—and these reports seldom err in the direction of under-estimation—their capacity, together with those of the existing works, will most probably not exceed the lower figure quoted by our correspondent—namely, 5,000,000 boxes per annum—and that only if the entire capacity was in constant employment.

Taking the other estimates presented as approximately correct, this would leave a possible surplus production of American plates amounting, in a good consumptive year, to about 1,000,000 boxes. But it is not unlikely that the figures given for the consumption that must for some time remain out of reach of the home manufacturers are rather above the mark. So far, at least, as they relate to the proportion of imported plates used in the oil and packing industries and re-exported, with the benefit of rebate of duty, in the form of cans, the estimate appears to be too high. Inquiry among the leading tin plate importing houses in this city, and consultation with one of the best informed individuals in the country in regard to the oil and canning trades, lead us to the conclusion that, at the outside, not more than 1,500,000 boxes of tin plates are re-exported yearly, including the greater part of the tin used on the Pacific Coast. This latter amount, which our correspondent places at between 500,000 and 1,000,000 boxes, cannot much exceed the lower figure. Last year's imports at San Francisco, according to the Custom House returns of that port, were only 213,000 boxes.

Moreover, the estimate of 6,000,000 boxes total consumption of tin plates in the United States in a good year, appears to be a decidedly low one. We have before us the record of tin plate imports for the past ten years, which shows that in the years 1889, 1890 and 1891 the numbers of boxes of tin plates brought into this country, calculated on a 14 x 20 full weight basis, were 6,733,840, 6,362,160 and 6,502,900 respectively. Last year, which was an

exceptionally bad one for the tin plate trade, the imports reached 4,537,580 boxes, to which must be added about 1,200,000 boxes manufactured at home, making about 5,700,000 boxes entered for consumption during a period of unusual trade depression. As very small stocks were held at the close of the year, we should place a good year's consumption at nearer 7,000,000 than 6,000,000 boxes. Calculating on this basis, the overproduction claimed by our correspondent would be eliminated, and a sufficiency of trade would be left for all the American manufacturers, provided—and here comes the real difficulty—they are at the time producing the material called for by American consumers in proper quantities and proportions.

While we do not believe that the American tin plate works will be turning out a surplus of high grade bright charcoal plates, or even of ordinary coke tins by the close of this year, there does, however, seem to be some danger of their overdoing the roofing plate business. According to the latest published returns, the tin plate output of the United States comprised nearly 45 per cent. of the whole, a proportion which, if continuously maintained, would shortly entail a large surplus production of this class of plates. But the good sense and sound judgment of the American manufacturers may be relied on to avoid any such unwise proceeding.

A Modern Tin Plate Plant.

Many misleading and unauthorized statements have recently been made concerning the nature of the improvements and additions to the plant of the New Castle Steel & Tin Plate Company, New Castle, Pa., which have been under consideration for some time. Through the courtesy of George Greer, president, and Charles Greer, secretary, of the company, we were favored during a personal call with full information regarding the additions to be made at this plant, and also regarding some improved methods to be put in use in the manufacture of tin plate. At the start we wish to state that this concern will not build a stamping works, nor is it contemplated to remove a stamping works from another locality to New Castle, as has been stated.

The present plant consists of six mills, the output being from 35 to 40 tons of black plates per day. The firm have decided to erect 10 or 12 additional mills, making 16 or 18 in all, and when these have been completed, the output of the plant will be from 100 to 125 tons of black plates per day. The addition of these mills will give the New Castle Steel & Tin Plate Company the distinction of having the largest single plant of its kind in the world.

Provision has also been made for the erection of eight additional mills when they are needed. The contract for the new mills has been placed with the A. Garrison Foundry Company of Pittsburgh, Pa., and consists of hot mills, complete tandem cold roll mills, doubling shears, spindles, boxes, crabs, &c. The contract for the engines has been placed with the Bass Foundry & Machine Works, Fort Wayne, Ind., which concern furnished the engines for the present plant. The contract calls for two Corliss cross compound condensing engines of 1100 horse-power each for driving the hot mills, and one Corliss compound condensing engine of 700 horse power for driving the cold mills. The same concern will furnish 175 tons or more of grooved pulleys for driving the mills by rope power. Power from the engines to the rolls will be transmitted by 2-inch special ropes. The diameter of the largest grooved wheel will be 25 feet, and this wheel will take power from a similar wheel from the engine shaft 14 feet 7 inches in diameter. These wheels are all grooved for 28 2-inch ropes made for this purpose. The contract for the new buildings, of which there will be two, has been placed with the Shiffler Bridge Company, Pittsburgh, Pa. These buildings will be 360 x 110 feet and 360 x 105 feet in size, and will be of steel. Ample light has been provided for and a new system of ventilation will be introduced. The buildings will be absolutely fire proof and will be constructed with a view of handling the raw and manufactured material to the most economical advantage.

In addition to the above improvements the New Castle Steel & Tin Plate Company have in view the more than doubling the capacity of their tinning department and the introduction of considerable labor saving machinery. The plan of driving the mills by rope power, thus doing away with gearing and housing, has been indorsed by some of the leading engineers of the country and pronounced entirely practicable. Incidentally it may be mentioned that this system has been in successful operation for some time in the plant of the New Castle Wire Nail Company, and is now being introduced on a more extensive scale in the rod mill of the same concern. An electric light plant of 100 arc lights of 2000 candle-power each of the very latest design and improvements will be installed. From the same dynamo incandescent lights will be furnished for the office.

Electric cranes, especially designed for this plant, will be used in the hot mill and cold roll mill buildings, and also in the annealing departments. In the construction of these improvements and additions the expenditure of money has been a secondary consideration, the whole object being to have a tin plate plant that will represent the most modern ideas of construction and improvements. It is expected that when the additions to equipment have been completed and the new methods introduced, the plant of the New Castle Steel & Tin Plate Company will be the best equipped tin plate plant in the world, and will, it is said, mark a new era in the manufacture of tin plates.

CABLE ADVICES from England report the stoppage, owing to financial difficulties, of the large Dyffryn Tin Plate Works of Daniel Edwards & Co. at Morriston, South Wales. The liabilities are estimated to be very large, probably between \$300,000 and \$400,000. The failure of other tin plate

concerns is expected to follow. A meeting of employers and employed was held this week at Swansea and a committee was appointed to formulate a scheme to further reduce the make and raise prices to a basis of 11 shillings. Only 16 manufacturers were, however, present at the meeting.

The Welsh Tin Plate Crisis.

Not for 30 years has the Welsh tin plate trade been in such a critical condition as it is in at the present time. Probably never before in its history has the outlook for future improvement been so gloomy. During the disastrous period of depression which followed the close of the war in the United States the entire trade was reduced to the verge of bankruptcy and the workmen and their families were literally starving. But at that time they had always the good hope before them that the American trade, which was their mainstay, would revive again and that they would ultimately be enabled not only to recover their losses, but to extend the market for their product on this side of the water. While things are not yet as bad with the Welshmen as they were in the middle of the '60's, the existing emergency compares to disadvantage with the former crisis in that little hope can be held out to them of retrieving their present losses in the American trade. Still less can they hope to increase their trade on this side of the water. To this fact the Welshmen appear to have been phenomenally blind until within a comparatively recent period.

The rise and progress of the tin plate manufacturing industry in the United States seems to have been blinked, whether willfully or not, on the other side of the Atlantic, until its existence could no longer be ignored. Only three months ago, one of the leading authorities in the Welsh tin plate trade publicly announced that the competition of the American works was no factor in the depression of the trade in Wales, and that the industry in this country was really on a very small scale. And yet, at that time, works having a capacity of at least 1 500 000 boxes were in existence, and were ready to start into full operation at the moment that the wage scale difficulty was settled. This they have since done; and the most sanguine friends of Welsh interests are reluctantly forced to admit, as does the *London Engineer*, in an article recently reprinted in these columns, that "the manufacture of tin plate in the United States is in a fair way to become a great industry."

In this, the day of their adversity, when it has become generally recognized that the United States has begun in reality to make her own tin plates, the Welsh manufacturers and their workmen are finding many candid friends among the English newspapers and trade journals. The general drift of their remarks is the familiar and exasperating "we told you so." On every hand the burden of the censors of the British press is that both employers and employed have been blind to their own best interests and are now reaping the fruit of their folly. They have now discovered, with wonderful unanimity, that the manufacturers should long ago have adopted more progressive and economical methods of manufacture; and that wages should have been "regulated" sooner, while such arbitrary restrictions on production as the famous "36-box rule" should have been discontinued and done away with.

The workmen, they say, should have been more ready to co-operate with their employers for the general good of both instead of resisting imperative wage reduction, and insisting on the enforcement of ruinous restrictions on the output. "The employers," says the *London Ironmonger*, "are deplorably lacking in enterprise and the workmen in respect of adaptation to current competitive conditions." The only way of escape from ruin that the *Ironmonger* can see is that the tin plate trade should be taken hold of by the large iron concerns and run on a perfectly modern basis in all respects.

In conclusion we quote the authority just mentioned, which appears to have reached the most practicable and rational solution we have yet seen of the Welsh tin plate difficulty: "With straightforward financing, modern plant and processes, enterprise and 'go' there is no reason why the trade should not remain an important one in spite of any amount of American competition. There is ample room for expansion. For instance, tin plates ought to be and might be used for packing tea in India, Ceylon, China, Japan and other countries, and if the planters were properly approached, they would probably adopt the idea. But the Welsh makers do not approach them and do not seem capable of any effort to save the one trade which up to quite recently was one of our few remaining monopolies."

A New Process of Pickling Metal.

The pickling department is one of the most disagreeable features of wire drawing or tin plating establishments. For some years chemists and electricians have been attempting by the use of electricity to devise a method by which the use of acid could be largely or wholly avoided in cleaning metals. The substitution of electricity was found to be extremely difficult, owing to the resistance in the solutions to the current and the unevenness of action on the substances to be pickled. All efforts in this direction proved abortive until quite recently. It is now stated that the process of cleaning metals by electricity has been fully demonstrated in the West to be a complete success. A Scotch chemist, Dr. A. H. Ramsay of Edinburgh, who has devoted years to the study of this question, has lately succeeded in demonstrating on a large scale in one of the leading wire mills of the country that he has overcome all the technical difficulties and reduced the process to practical results. Those who are familiar with what has been accomplished by him are confident that he has perfected a new process of pickling which will supplant the old method.

The process consists in making the articles to be pickled the anode or positive pole during the electrolysis of a solution of a salt of iron. In the case of pickling rods for wire drawing the rods were immersed in a solution contained in a vat made of wood and having round its sides in the solution a thin cylindrical sheet of iron, and connected by the hooks holding the rods to the positive pole of a plating dynamo capable of giving in the case of white pickling a current with a pressure of 1½ to 2 volts, and in the case of black pickling a pressure of 4½ to 5 volts between anode and cathode, while the thin circular sheet of iron was attached to the negative pole. The current passing through the solution liberates the acid of the salt on the anode or article to be pickled and the iron on the negative,

consequently liberating the acid on the rods. This, combined with the surface scale and iron, forming the original salt again, which is dissolved in the solution, while the amount of iron dissolved off the rods was deposited on the negative cylindrical plate.

A small dynamo of 8 horse-power served a ton of rods per hour consecutively, cleaning them so thoroughly that they drew down from No. 5 to No. 15 gauge perfectly. The wire was then galvanized, and that operation was also quite successful.

In black pickling the current used is of greater voltage than in white, because the scale covering the rods or plates being a poor conductor it caused a greater resistance to the current. As the scale dissolves, the current passes through with diminished voltage.

The process has also been practically tried with plate for tinning, and arrangements are now being made to place it in some of the largest tin plate works in the country. The plates were pickled $\frac{1}{2}$ ton at a time, and perfectly done, and then tinned.

The process is owned by the International Metal Pickling Company, 1113 Chamber of Commerce Building, Chicago, who have placed it in a wire mill near that city.

Those who have had experience of the steam and acid fumes ever present in conducting the old process will thoroughly understand the relief to workmen which cleaning by electricity will give, while its saving of nearly all the acid used by present methods is of the greatest practical account. The saving in acid in one mill alone amounts to \$1800 per week, which shows enormous possibilities in economy. From a sanitary point of view, great advantages are also claimed, as the new process does away with the insidious health destroying fumes and with waste liquors running down drains to pollute rivers and lakes. The pollution of water courses is now becoming an important matter in this country. Looking at the question from all sides, the successful application of electricity to the pickling of metals may be considered one of the great improvements of this decade.

SCRAP.

PRESIDENT M. M. GARLAND of the Amalgamated Association of Iron and Steel Workers was the guest of the American Tin Platers' Union, at Elwood, Ind., this week. He expressed the opinion that the outlook was much brighter for the tin plate business, and he looked for a revival of business in this line during the summer months.

ACCORDING to English advices, more disquieting rumors are being circulated as to the financial position of tin plate works in South Wales. It is stated that at least two large and old established concerns have actually suspended payment, and that others are likely to follow suit.

A PRESS CABLE DISPATCH of February 28 from Swansea, Wales, states that at a meeting of the South Wales Tin Plate Board of Control, held that day, it was decided, in view of the depression in the tin plate trade, to only run 397 mills, and that these establishments were to run only on two-thirds time. It was also resolved to restrict the production to one third of the present output. Eighty-five mills which have not joined the Board of Control will work independently.

THE LEECHBURG FOUNDRY & MACHINE COMPANY, Pittsburgh, have made their first shipment on the contract for tin plate machinery to the La Belle Iron Works, Wheeling, W. Va.

F. R. PHILLIPS, Philadelphia, is erecting and equipping the entire tin plate plant for McIlvain, Crater & Hugh, at Reading, Pa. Two Phillips-Newbold machines have been shipped to the works and a third will follow as soon as ready. Mr. Phillips advises us that he has recently shipped three of his latest improved eight-roll machines to the Falcon Tin Plate & Sheet Company, Niles, Ohio, and two to Richmond, Va. Three more are building for the South and nine for the West.

A NEW FEATURE in the British Board of Trade returns of imports and exports for the month of January last is a separate table showing the exports of black plates of steel and iron for tinning. Prior to 1895, iron black plates were included with "hoops, sheets, and boiler and armor plates," while steel black plates were enumerated under the heading of "steel unwrought;" consequently it was very difficult to obtain any reliable statistics as to the amount of black plates for tinning purposes shipped to the United States from Great Britain. The amount so exported in January, 1895, was 24,153 tons. To all other countries 15,808 tons were shipped, making total exports 39,961 tons.

POLLOCK & Co., Limited, is the style of a firm located at 2040 North Tenth street, Philadelphia, who have commenced tinning plates. They have one pot running on roofing plates and expect to have others in operation shortly. The concern originally were manufacturers of solder, and they propose to continue that branch in connection with their new venture.

WE UNDERSTAND that a new tin plate works will shortly be put in operation in Baltimore, Md. A suitable location in the section of the city known as Canton has been secured and contracts have already been let for the machinery equipment. It is reported that the contracts include machinery for rolling black plates.

MERCHANT & Co., Incorporated, Philadelphia, are now running six pots at their tin plate works.

THE QUESTION of the actual capacity, present and prospective, of the American tin plate works is a particularly interesting one, in view of the prediction freely expressed that their product will before long outrun consumption. John Jarrett of Pittsburgh, secretary of the Tinned Plate Manufacturers' Association, who has excellent facilities for gathering information on this head, figures out that at the present time there are in operation in this country, and in actual course of construction, 157 hot mills. There are contemplated, and will likely be erected within the next six months, 39 additional mills, or a total of 196 hot mills that are expected to be in operation by October 1 next, or earlier. Allowing a product of 2 tons to the turn, or 6 tons per day for each of these mills, which is a low estimate, gives a total daily output of 1176 tons. Computing 270 working days to the year gives an annual output of 317,520 tons of 2240 pounds each of black plates. In a box of IC plates, 14 x 20, there are 112 pounds. Simply multiplying the total output by 20, the result gives a potential production by American tin

plate works of 6,350,400 boxes per annum.

SERVICEABLE DESK BLOTTER PAPERS are being distributed by Nathan Trotter & Co., Philadelphia, Pa., in the interests of their special plates. One blotter, backed with smooth paper, refers to Trotter's roofing, which is described as a high grade American roofing plate, extra heavy coated and every sheet guaranteed to be equally and evenly coated, the sheets furthermore being re-squared and stamped with brand and thickness. An important feature of this plate is that there are no wastages. The firm have had a long experience in supplying the wants of the American people in the line of tin plates and metals, having been established in the year 1789 and are therefore in their 106th year.

THE TIN PLATE DECORATING COMPANY, 110 John street, New York, an old-established concern making a specialty of color work and other decoration for tin ware, speak in high terms of the smooth and even quality of the coating on the high grade bright tin plates made in this country. They refer to the American product as lending itself peculiarly well to their work, for the finer kinds of which a particularly smooth surface is indispensable.

THE HENDERSON TIN PLATE COMPANY, Norristown, Pa., have their works still closed down, and there seems to be no probability of their being put in operation in the near future.

THE WORKS of the Norristown Tin Plate Company at Earnest Station, near Norristown, Pa., are closed down indefinitely and Richard Lewis, their late manager, under whose superintendence the works were erected and successfully run for over two years, has returned to Wales. We are informed by Charles S. Trench & Co., 20 Cliff street, New York, the agents of the Norristown Tin Plate Company, that the works are now for sale. They include eight tinning sets, a steam pickler, electrical plant and other recommendations.

THE Falcon Iron & Nail Company and the Falcon Tinplate & Sheet Company of Niles, Ohio, have opened an office and warehouse in Chicago for the sale of Galvanized and Black Sheet Iron, Cold Rolled and Common Surface Sheet Steel and Tin and Terne Plate. A full stock will be carried at all times, so that prompt shipments can be guaranteed. The office and warehouse are at the well-known stand at 16 and 18 West Lake street and will be under the management of Wm. E. Stockton, who was for many years the Western representative of Moorhead, McClesne Company. The Falcon companies have for some time been contemplating the establishment of a warehouse in Chicago, and are fortunate in securing such a well and favorably known representative of the Sheet trade as Mr. Stockton to manage it. E. C. Brainard, general salesman, will be more closely associated with the home office in the future.

TWO HUNDRED and THIRTY Welsh tin plate mills, out of a total of 531, were entirely idle the first week of this month, and many more were running at a low rate of production. Since that time others have shut down, so that nearly half the tin plate capacity in Wales is now inactive.

The eight mills of the Dyffryn Tin Plate Works, Morriston, South Wales, are idle.

STOVE TRADE NOTES.

Daniel M. Thomas.

The death of Secretary D. M. Thomas, which was briefly announced in these columns last week, removes from a broad field of usefulness a man of sterling worth and one whose loss to the stove trade of the country will be severely felt, especially by the two associations with which he was prominently identified during the later years of his life. Although the trade at large was kept advised from time to time of the serious illness of Mr. Thomas, and finally of the faint hopes entertained of his ultimate recovery, the announcement contained in our last issue must have come as a sudden shock to the multitude of those who enjoyed a personal acquaintance with him, while many others who knew him only by his name and works will deeply regret the loss to the business world. For nearly a year past Mr. Thomas was far from a well man, but it was not until his return from a meeting of the stove men in the West, early in December last, that his condition became such as to alarm his friends. For a time he was confined to his home, but during the holiday week felt so much better that he visited his office at 80 Broadway, New York. The improvement in his condition, however, was of short duration, and with occasional rallies he gradually grew weaker until at a quarter before 12 on the morning of Thursday, February 21, he quietly passed away.

Mr. Thomas was born on May 11, 1840, at Swansea, South Wales, where he received his early training and education. At the age of 14 years he became connected with the tin plate industry, remaining in Swansea until the year 1867, when he came to America. His first business connection in this country was in the capacity of bookkeeper for the house of Foxell, Woodworth & Jones, hollow ware manufacturers, Troy, N. Y. In February, 1868, in connection with the late Louis Potter of the then stove manufacturing firm of Potter & Paris, he formed what was known as the Troy Galvanizing Company. In November, 1868, Mr. Potter disposed of his interest to the firms of Hicks & Wolfe and Sheldon & Greene, at that time prominent stove makers of Troy, but the business was continued until galvanized reservoirs ceased to be largely employed for stoves. In 1871 Hicks & Wolfe

leased the foundry of Morrison & Colwell, at Green Island, and Mr. Thomas assisted in the management, which may be said to have been his introduction to the stove business of this country. In the year 1874, the galvanizing trade having been rendered unprofitable by the introduction of tin lined copper reservoirs for stoves, Mr. Thomas, in connection with two others, erected in 1875 a foundry at Medina, Ohio, for the manufacture of hollow ware. Owing, however, to a lack of sufficient capital, the enterprise was not altogether successful, and Mr. Thomas turned his attention to other things. Later in the year named he was invited by the late W. H. Tefft, president of the Detroit Stove Works, Detroit, Mich., and the late John J. Bagley, Governor of the State of Michigan, to make his home in



DANIEL M. THOMAS.

Detroit. This he did, and in connection with Mr. Tefft, Gov. Bagley, Francis Plims, E. S. Barbour, M. I. Mills and Jeremiah and James Dwyer, he formed what was known as the Detroit Iron & Brass Mfg. Company, incorporating it under the laws of the State of Michigan, the principal product of the company being stove hollow ware. As secretary, he continued in the management of this corporation until the year 1887, when the charter was surrendered. The business was carried on in Detroit until 1891, when it was removed to Elmira, N. Y., and continued under the name of the Chemung Hollow Ware Works.

It was, however, in his relations to the National Association of Stove Manufacturers and the Stove Founders' National Defense Association that Mr. Thomas was best known to the stove trade of the country. It was at the

Louisville meeting of the stove manufacturers, held February 3 and 4, 1886, that a resolution was adopted authorizing the employment of a permanent secretary. Mr. Thomas received the appointment and entered upon the discharge of his duties July 27, with headquarters in Louisville. The Defense Association was formed at Cleveland, Ohio, on June 4, 1886, at which time Mr. Thomas was elected secretary of that organization. These positions he retained until February 1, 1890, when he retired and shortly afterward took general charge and direction of the affairs of the Keeley Stove Company of Columbia, Pa. At the Chicago convention of the National Association of Stove Manufacturers held the first week in February of that year Mr. Thomas was elected president, which office he held

until the Philadelphia meeting the first week in May, 1891. At this time he was again selected for the office of permanent secretary of the two associations, retaining it until the time of his death. Mr. Thomas was in many ways peculiarly well qualified for these important offices, being a man of strong character, wide experience, not easily discouraged by difficulties however serious, and of excellent executive ability. At the time of his death he was a member of the American Institute of Mining Engineers and president of the Bower-Barff Rustless Iron Company, he being elected a director of the company on October 2, 1891, and president on August 31, 1892. He leaves a widow, three daughters and a son.

The funeral services were held at his late residence, 134 Fort Greene place, Brooklyn, N. Y., at two o'clock on the afternoon of Monday, February 25. The impressive burial service of the Episcopal Church was read by Rev. Dr. Lindsay Parker of St. Peter's Church, assisted by a boy choir, which rendered, among other pieces, "Abide With Me," "Rock of Ages" and "I Heard a Voice from Heaven." The floral tributes were numerous and beautiful, conspicuous among them being a large wreath of lilies of the valley, with the letters "N. A. S. M." in dark flowers across the center; a handsome cross from the New York members of the National Association of Stove Manufacturers, and a beautiful wreath from the New England Stove Manufacturers' Association.

Among the friends who gathered at the house were representatives of the stove associations with which Mr. Thomas was connected, and also members of the local trade. Prominent among those present were George D. Dana of St. Louis, Mo., president, and W. S. Stevenson of Philadelphia, Pa., treasurer of the National Association of Stove Manufacturers; W. T. Bradberry of the Anshutz-Bradberry Company, Pittsburgh, Pa.; E. W. Peck of the Co-operative Foundry Company, Rochester, N. Y.; Abram C. Mott of the Abram Cox Stove Company, Philadelphia, Pa.; W. F. Greene of Troy, N. Y.; C. L. Merritt, formerly of Jones & Merritt, hollow ware manufacturers of Auburn, N. Y.; Prof. George W. Maynard of the Bower-Baiff Rustless Iron Company; Eugene Munsell of Eugene Munsell & Co., D. S. Ramsay of Ely & Ramsay, Fred. and Dwight Richardson of Richardson & Boynton Company, Henry E. Janes of Janes & Kirkland, agents for the Michigan Stove Company, and William Corry, all of New York City.

The Stove Trade of the Ohio Valley.

Reports respecting the stove and range industry within a radius of 200 miles of Cincinnati are still somewhat conflicting, but the impression is given of an improvement in the volume of business, certainly in the growth of confidence. Especially is this the case in Ohio and Indiana. There are exceptions, of course, even in Ohio, but south of the Ohio River the opening of better times seems to be delayed beyond the experience of those in more fortunate situations.

Some manufacturers in Ohio are very emphatic in their statements of marked improvement in trade since the opening of the new year, citing a volume of business in January more than double that of January, 1894, while thus far February has kept pace with the preceding month's record. On the other hand there are foundries south of Mason and Dixon's line where sales have averaged about 10 per cent. less thus far during the current year than during the corresponding period of 1894, and in consequence some manufacturers are still running only half time, without encouraging prospect for the early future. Money continues scarce and collections poor.

Of course the value of any comparison with last year depends largely upon the actual business done a year ago, and all improvement or depression is of a relative nature. Happily the experience of the Southern foundries seems to be the exception rather than the rule. The stove cupolas north of the Ohio are melting more and more iron as the season advances, as is evident from purchases of pig iron, reports of contracts and by direct information of a number of manufacturers, who are resuming operations or increasing half to full time. The money market at Cincinnati has hardened materially during the week, with increased application for

discount from merchants and manufacturers and liberal shipments of currency to the rural districts.

Philadelphia Stove Trade.

The stove trade in this section is dull and inactive. It was naturally expected that the recent cold snap would stimulate the trade sufficiently to help off the stock of heating goods remaining in the dealers' hands. Such was not the case, however, except as regards gas and oil heaters, which goods found ready sale and were practically cleared out. The demand for coal stoves throughout the month of February was exceedingly light. Of course after the end of January the season for heating goods is considered closed, but it was surprising that the continued severe weather did not prolong the season. There is a little doing in ranges, but it cannot be said that business in this line is up to the average. The demand for furnaces keeps up wonderfully well, especially in the higher grades.

Refrigerators and gas and oil cooking goods are making their appearance on the market, and the outlook for a better trade than was experienced last year in this line is very encouraging. Most of the goods show improvement upon last season's styles, and the variety is somewhat increased.

It is pleasing to notice a decided improvement in collections. Fully two-thirds of the obligations maturing last month were met in full. Requests for renewals of paper were for the most part accompanied by cash remittances, and the plea of "hard times" was urged by chronic laggards in a lesser degree than for some time past.

Stocktaking has occupied the attention of founders more or less since the opening of the year, and the running of foundries consequently has not been steady, even with a decreased output. There is a comfortable feeling existing in regard to the future, and the usual preparations in the way of new goods for the coming season are evident. It is pretty generally conceded that the demand next fall will be large, but conservatism in regard to outputs will be studied, and therefore it is not at all likely that there will be heavier stocks warehoused than was the case last year, reliance being placed upon a full running of plants to supply the demand.

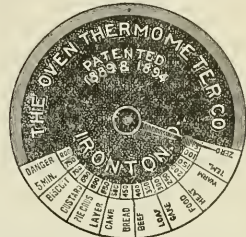
The Secretaryship of the National Association of Stove Manufacturers.

We are in receipt of official advices that the office of secretary of the National Association of Stove Manufacturers will, for the present at least, be continued at 80 Broadway, New York City, as heretofore. Miss M. A. Thomas has been appointed to serve as secretary until the next annual

meeting of the association in May. All correspondence pertaining to association matters should therefore be addressed as above.

Oven Thermometer.

In speaking of the oven thermometer shown in the accompanying illustration the Oven Thermometer Company of Ironton, Ohio, say that it is just the proper thing for bake ovens of all descriptions and that it has been in use by a number of professional and amateur cooks with great satisfaction. The hand on the dial is operated by mechanism which is moved by the expansion of a straight piece of brass which is fastened securely at both ends. A very little expansion causes a considerable curve and the movement is transmitted by means of a cogged rack to a small pinion on the shaft which passes through the tube to the dial. In adjusting it to an oven door it is only necessary to drill a $\frac{1}{4}$ inch hole to allow the small tube to pass through. The casting to which the brass rod is attached is then fastened to



Oven Thermometer.

the oven door by means of a jam nut to which the dial is attached. All the iron parts are nickel plated and the dial is enameled in the same manner as watch dials. The parts being interchangeable, any part that may be broken can be replaced in a few minutes. The company issue circulars, which will be furnished on application, showing the dials used in connection with coal and wood stoves and with gas ranges. They are said to be very simple and easily adjusted.

New York East Side Chat.

The late John S. Perry paid a great deal of attention to statistics, and among his addresses to the stove trade was one touching immigration. The prospective immigrants were counted as large consumers of stoves, and so they are, for stoves formed a part of every family outfit, and a diminution of immigration meant a lesser demand for stoves. But in addition to its consumption of stoves immigration has brought a large number who have become dealers in them, and it is astonishing how successful are many of them. New York numbers lots of these people, who couldn't speak a word of English, who have started in the business and are in good circumstances—in fact are wealthy, according to their way of living. As soon as the Americans make money they begin to spend it, and plenty spend more than they make. The family want to get away from the shop and have a house to themselves, and it takes considerable money to run them without regarding accumulation. Not so with the for-

eigners. They save and pinch and live in the same surroundings that would hardly suit even the poorest Americans. As the greenhorns arrived in New York they were in demand, and as they could not speak United States, would work for their board. Excellent help and mechanics were easily procured by the East Side dealers for nominal wages and they made them earn it. Nights, days and Sundays they put them through; they would send men downtown and make them bring up a load of stuff big enough for an express wagon, carry stoves on their backs or in hand carts—in short, it was an ever lasting work for the greenhorn.

They usually put in an appearance through Water street in company with one of the boss's progeny, perhaps a little girl eight or nine years old. It is surprising how young these children begin to learn business. She has the orders written out, and as the pieces are bundled up she pays for them and the man carries them home. Some of these tota interpret very fast and seldom make mistakes. The parents of many of them never learn English and cannot make themselves understood, although they may have been here for years. They depend entirely upon their children, consequently the youngsters early acquire business habits and are unusually precocious. The daily contact with the teeming East Side populace whose only refuge is the streets is a prominent factor in their development. They are always sent to school, and it is somewhat surprising the metamorphosis that is made in them in a few years, especially the girls. They begin to spruce up very early, and as they generally come from a healthy stock they round up in great shape, and the dirty little snip soon becomes a natty young woman. But, of course, she will have the East Side polish, which is not exactly of the 400 style, but it is a sort of a sure Mike kind and no humbug, and when she slings on her duds Sundays and holidays and goes down to Coney Island or wherever she pleases, she don't say nothing to nobody and nobody desires to say anything to her unless she wills it. There is no theory about her education; it is practical and what she knows she knows. People who are brought up in the tenement house districts acquire what may be termed a tenement house twang to their voice and it seldom leaves them. Many of these people get uptown and live in great style—that is, as far as spending money and having fine houses are concerned—and they really do enjoy being sociable and having good times, and as a rule they don't neglect their downtown neighbors. Many of the East Side tenements turn out a big crowd who visit up in the high priced circles of the city and they all have a good time. But if you once get on to that twang you will never mistake the origin of many of New York's finely draped people. They certainly are stylish looking, and if you did not know their voices you would think they were McAllister's intimates.

You can rely upon it that Heinne Schnitz, whose portrait adorned *The Metal Worker*, will get uptown before long. He has got some fine looking kids and they will boss him out. The men who have the hard times with these greenhorns when they begin to come downtown for repairs are the porters in the stove stores. They have a smattering of English, but it is as clear as mud to the porter as to what Heinne or his brother would want. As soon as they commence to ask Heinne about "the

dstes, or, if it is a draw grate, does it shake on the side?" the trouble begins. Usually when people do not understand each other's language, they make amends by yelling about what they wish to say, and by doing this they are evidently under the impression they make it perfectly clear what they do say.

But the Water street porter is not a saint at any time, and the crowd and rush in the fall transform him into a demon. There are always a lot of people after repairs, and as they come in a rush, all wanting to be waited on at once, it is very trying; and when it comes Heinne's turn in one of these crowds to get his stuff, and he has to be questioned about it, you can rely upon it there is a row. But Heinne grows out of it in a year or two, and when "he makes pines by himself," somebody looks after him besides the porter, and "How do you do, Mr. Schnitz? How is all the family, Mr. Schi-z? Come down to get some stoves to day, Mr. Schnitz?" &c. One touch of business makes kindred of us all.

JEEMS.

ODD PLATES.

THE KERNAN FURNACE COMPANY, Utica, N. Y., will be represented upon the road during 1895 by the following salesmen, who will cover the territory named: William J. Owens, in Illinois and Wisconsin; George B. Carrwith, headquarters at Omaha, Neb., in Minnesota, Iowa, Nebraska, Missouri and Kansas; C. H. Fresher, Western Pennsylvania, Southern Ohio and Indiana; E. R. Rayburn, in Northern Ohio and Michigan; J. A. Breen, in New York and Vermont; John Hastings, in Central New York, and Harry King, in New York City, Brooklyn, Eastern Maryland and the District of Columbia. The company's Chicago branch will be in charge of Charles A. Sweeney and Edward F. Kernan and their Denver branch, which will handle the trade in Colorado, Wyoming, Utah and the Pacific Coast, will be under the management of Kellogg & Stokes.

THE ALBANY, N. Y., branch of the Stove Mounters' International Union has appointed a committee to visit the various foundries in that city and endeavor to arrange for carrying on the business under the auspices of the union.

JACOB WILSON, Easton, Pa., has augmented his popular line of New Idaho ranges by the addition of a size having an oven 20½ x 21 inches in area and 13 inches in height.

THE WEST SIDE FOUNDRY COMPANY of Troy, N. Y., have just completed the list of their traveling men and the territories to be covered this year, as follows: D. L. Hamill, for Western New York; J. F. Hart, for Eastern, Northern and Southern New York; E. Gaer, for Vermont and New Hampshire; O. C. Harrison, for Michigan, Wisconsin and Minnesota; E. B. Morse, for Indiana, Eastern and Southern Ohio. In Northern Ohio the company will be represented by the Stolberg & Clapp Company of Toledo, Ohio.

THE EXCELSIOR MFG. COMPANY, St. Louis, Mo., advise us that their agent at Austin, Texas, Geo. A. Busb, has sold one of their largest Charter Oak ranges to Mrs. Governor Culbertson of Texas. Mr. Brush in writing to the Excelsior Mfg. Company with reference to this sale admits that he feels very proud of having made it, as the cook in the Governor's house is a prize cook, and had a Char-

ter Oak range in her mother's house for seventeen years, and thus feels that she knows the merits of the Charter Oak stoves.

THE LEHIGH STOVE & MFG. COMPANY of Lehighton, Pa., are distributing a neat four-page folder illustrating and describing the Lehigh range, which is offered the trade in four sizes and 33 varieties. This stove has been upon the market for nearly five years, and has established for itself an enviable reputation among dealers. The circular states that this stove "marks a distinct improvement in range construction, being made with what is known as a sheet flue, which, while increasing the draft and making a marvelously quick baker, at the same time avoids any contraction of the oven." It has patent triplex grate, oven door opener and attractive ornamentation, in which nickel plays an important part.

THE MODEL LEHIGH RANGE, which has recently been placed upon the market by the Lehigh Stove & Mfg. Company of Lehighton, Pa., is the subject of a very complimentary notice in a recent issue of the *Lehighton Press*. Reference is made to a practical test of this range in the kitchen of the residence of Mr. Butler, at East Mauch Chunk, Pa. On Saturday evening, February 16, Mr. Butler entertained E. L. Smith, the bookkeeper of the stove works; Isaac Oberholzer, superintendent of the mounting department, and Jacob De Frehn, who has charge of the shipping department. The entire dinner was prepared on the Model Lehigh and was a success in every particular.

THE CLEVELAND STEEL RANGE COMPANY have just completed arrangements for the transfer to them of 66 feet of land at the northwest corner of Detroit and State streets, Cleveland, Ohio, where they propose erecting early in the spring a three-story factory which will accommodate about 300 men. We understand that by the terms of the transfer the company gain control of the entire lot, which extends back to Vermont street. The building will be of brick and equipped with machinery of the most approved pattern. At the present time a frame dwelling occupies the new site, but this will be moved to the west of the lot so as to make room for the new building.

THE WEBB STOVE COMPANY of Taunton, Mass., are making arrangements to enlarge their works in order to provide additional facilities for meeting the increasing demands of their trade. About two years ago they added a story to the office portion of their main building, and now they propose to raise the remainder of the structure another story, thus making both parts uniform. The work will be commenced as soon as the weather will permit and pushed rapidly to completion.

MICHAEL RAGAN of Cadott, Wis., died of Bright's disease on February 13, at the age of 32 years. He was manager of the Cadott Heating & Stove Company and secretary of the Northwestern Heating and Stove Association.

THE GRACIA FOUNDRY & MFG. COMPANY, Painesville, Ohio, have a curiosity in the shape of a cook stove which is claimed to be the oldest of its kind in that State. It is said to have been cast in the year 1822, direct from a blast furnace, the material being charcoal iron made from bog ore.

THE SHULTZ STOVE MFG. COMPANY of Austin, Texas, were recently incorporated, with a capital stock of \$20,-

000. The incorporators were Herman Shultz, Claude Wright and Gustavus A. Bobbert.

THE PHILLIPS & CLARK STOVE COMPANY of Geneva, N. Y., have resumed operations after being closed about two months.

JOHN H. SCHNEIDER, eldest son of Paul and Anna Schneider, died at Bedford, Ohio, on Friday, February 22, in the twenty-fourth year of his age. He was assistant superintendent of the Schneider & Trenkamp Company of Cleveland, Ohio.

THE RICHARDSON & FOYNTON COMPANY, 234 Water street, New York, are receiving congratulations on the behavior of the Perfect hot air furnaces during the recent cold weather.

THE TOLEDO STOVE COMPANY of Toledo, Ohio, whose foundry has been closed for a short time on account of damage from fire, advise us that the debris has been removed and that their molding department is now in complete running order.

THE SUPERIOR STEEL RANGE COMPANY of Cleveland, Ohio, have recently removed their offices to the large building 131-135 Viaduct, where they enjoy increased facilities for handling their large and growing business. The demand for Superior and Marquart steel ranges is of a gratifying character, and with their new accommodations they are prepared to promptly handle all orders with which they may be intrusted.

THE LEHIGH STOVE & MFG. COMPANY of Lehigh, Pa., are distributing an illustrated circular calling the attention of the trade to their Model Lehigh range, fitted with patent oven thermometers. The latter device is so placed as to show at a glance at the outside of the oven door the degree of heat within the oven. The device tells when the oven has reached the proper temperature, and avoids the time and trouble of constantly opening the oven door to see if the heat is great enough. It also tells how to manage the fire by showing when the oven is nearly at the right heat, at which time, with a good fire, the front drafts can be closed. This not only saves putting on fresh fuel while baking is in progress, but also saves in the amount of fuel used. The Model Lehigh embodies all the improvements of the famous Lehigh series, and has ample flues, cut top, large oven, patent duplex grate and attractive ornamentation.

THE EMERGENCY TRADE resulting from the cold weather has made business brisk for Sam S. Utter of 113 Beekman street, New York, oil and gas heaters alike being in demand. Arrangements are being made for a lively summer trade and his line of oil and gas cooking stoves for this year will be of the up-to-date character.

THE FRONT RANK STEEL FURNACE COMPANY, 705-707 North Main street, St. Louis, Mo., are distributing to their friends in the trade cards measuring $3\frac{1}{2} \times 6$ inches, calling attention to the fact that they are heating contractors and in a position to furnish and install both warm air and hot water apparatus.

THE BRAND STOVE COMPANY of Milwaukee, Wis., are about to open a branch warehouse and salesroom at 77 Lake street, Chicago, on the ground floor, under the management of De Witt Van Evers, as heretofore. They will carry a stock of stoves and a full line of castings. They will be fully

equipped and in better shape than ever to do business in Chicago and suburbs, having what they consider one of the best locations in the city for handling goods. They expect to be ready by March 11 to make deliveries of both stoves and castings from the Chicago house.

THE PORTSMOUTH STOVE & RANGE COMPANY, with general office and works at Portsmouth, Ohio, have just issued a little pamphlet of a size convenient to carry in the pocket, illustrating and describing their model steel ranges. These are shown in different varieties, accompanied by full descriptive particulars. Attention is also given to steam tables, charcoal broilers, &c., while price-lists and numerous testimonials constitute other features of the little volume.

THE K D STEEL RANGE COMPANY have recently been incorporated at Cleveland, Ohio, with a capital stock of \$10,000, for the purpose of buying, selling and manufacturing steel ranges and novelties. The new concern are erecting a factory for manufacturing purposes and expect to have the plant in operation in about six weeks. The incorporators are Frank Lewis Warke, Oscar T. Emrich, Frank C. Cain, Irving E. Hershey and Frank E. Dellenbaugh.

MAY & FRIEGER, AKRON, Ohio, are offering the trade what is known as the Akron air blast furnace, so constructed, it is claimed, as to successfully burn all kinds of fuel, but more especially soft coal. This heater is the invention of Mr. May, who after 25 years' experience in the furnace business became convinced by careful experimentation and study that radical improvements could be made in furnaces as then constructed. He therefore invented and about six years ago perfected the "air blast" principle for burning coal, which he has applied to the Akron air blast furnace. This heater has been before the trade sufficiently long to establish for itself an enviable reputation, and during the extreme cold weather of the past winter has been severely tested with entirely satisfactory results.

JAMES P. GARDNER has an article in a late issue of the Cincinnati *Commercial Gazette* in which many facts and figures of interest in connection with the American export trade are presented. He shows that from June 30, 1892, to June 30, 1893, there were exported stoves and ranges valued at \$216,463, and for the fiscal year ending June 30, 1894, the valuation was \$236,284, showing an increase of \$19,821.

THE FAVORITE STOVE & RANGE COMPANY of Piqua, Ohio, received under recent date a very complimentary letter relative to a gas range which they have lately put upon the market, the writer being the general superintendent and engineer of the Mutual Fuel Gas Company of Chicago, Ill. We quote from the letter the following extracts: "The burners work perfectly under a range of pressure of from 1 to 4 inches, and I have been unable to make them explode either while lighting or turning off the gas. The pilot for lighting the oven burners is both ingenious and effective, and without doubt, the best I ever saw. The oven is a gem, being amply large for any family, and perfection itself in its operation."

GRINBERG BROTHERS of 154-155 South street, near Peck slip, New York City, are pushing with a great deal of enterprise the sale of their specialties in the way of gas and oil stoves. They

are offering the trade, among others, the Eagle two burner hot plate for gas and a two-burner lamp stove made under the same name.

THE B. C. BIER STOVE COMPANY, Baltimore, Md., are about to place on the market the Harford, a portable range in two sizes, for use either with or without a fire place. It has a horizontal boiler, right or left oven, ash pit of ample size, patented device for heating an upper room, and all modern improvements. The range will also be supplied to suit an ordinary slide boiler, and fitted with brackets and plate shelf. The company are also redressing their Washington fire place heater, and the same, in its improved style, will be known as Washington No. 2. The company's works are at present closed for stock taking.

WE HAVE RECEIVED from the Michigan Stove Company a package of circulars and pamphlets calling attention to a number of their leading specialties. One of these publications which is printed in colors relates to the Oak-Garland line of stoves for hard or soft coal or wood. A four-page folder illustrates and describes the Syphon Oak-Garland, an attractive base heater embodying the latest features. This circular is also printed in colors and presents a general view of the stove as well as a view showing the bottom of the stove removed and the base flues exposed. A circular which we find in the package carries a picture of an outside swinging sign consisting of the Garland trade-mark. The sign represents the results of efforts which have been made ever since the company's trade-mark was originated, with a view to producing something that would exactly meet the requirements. The sign is made of stamped metal and measures $36 \times 4\frac{1}{2}$ inches. The purpose of the sign is to hang in front of the dealer's store, where it cannot fail to attract attention. These signs are offered at the low price of \$11 each and the company agree to take back the sign at any time and to refund the money. We also have from the company a card, intended for transmission through the mails, and carrying upon one side reference to the use of a union in Garland stoves and ranges and to the fact that they are provided with stated ovens.

FLASHINGS.

THE JOHN MCVOY CORRUGATED IRON WORKS, Muncie, Ind., are reported as running steadily, and shipping out three carloads of iron a week.

J. J. LINSKY, Union City, Conn., is remodeling his building, which will have sheet metal cornice and skylights.

THE JERSEY CITY GALVANIZING COMPANY, 112 John street, New York, have just issued a new and enlarged catalogue and price-list of their specialties in metal roofing, corrugated and round leader, ventilators, and sheet iron work of a large variety. The company are running their works in Jersey City, N. J., full and speak encouragingly of the outlook in business.

GLOBE VENTILATOR COMPANY, Troy, N. Y., send out cards calling attention to the merits of their well-known device. A white line sketch of a ventilator ousting a company of disease germs, together with an appropriate description in verse, is a feature of the card.

Star Wrenches.

The cuts shown herewith represent wrenches offered by the Star Wrench Company, 801 Wainwright Building,



Fig. 1.—The Star Pipe Wrench.

St. Louis, Mo. The pipe wrench, Fig. 1, is made without springs and is interchangeable in all of its parts. The movable jaw and the nut are made with an oval top and bottom thread, guaranteed by the makers not to slip or burr. The manufacturers claim that the wrench grips the pipe firmly without any lost motion, and that it will not mash the pipe nor slip off. The wrench is made in eight sizes,

tration herewith. It is designed to take the place of a forge for heating tools for dressing, tempering and annealing. It occupies but little space, can be readily transported to the work, is clean, and after the fuel tank is filled and the

Gas Soldering Iron Furnace.

The accompanying illustration shows a general view of a new gas soldering

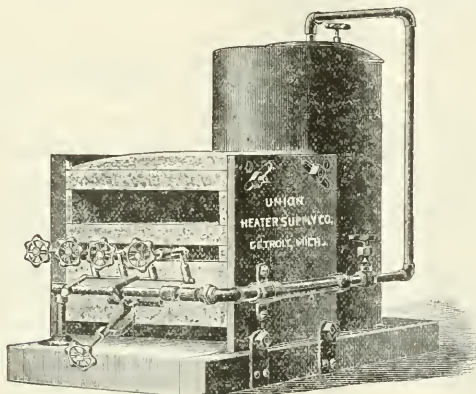


Fig. 2.—The Star Combination Wrench.

lengths from 6 to 48 inches, to take pipe from $\frac{1}{4}$ inch to 5 inches in diameter. The combination wrench, Fig. 2, is referred to as simple in construction, strong, durable, and as entirely free of springs. It is claimed that it is interchangeable in all its parts, and that it cannot slip, lock, or mash the pipe. The wrench is designed for nuts, couplings and pipe, for the use of plumbers, gas fitters, machinists, engineers, and for every branch of the mechanical trade where a wrench is used. The tool is made 10 and 14 inches long, to take from $\frac{1}{4}$ inch to $1\frac{1}{2}$ inch pipe.

Tool Dresser.

The Union Heater Supply Company, 90 Congress street, Detroit, Mich.,



Tool Dresser.

make a specialty of gasoline apparatus for mechanical purposes, and one of their tool dressers is shown in the illus-

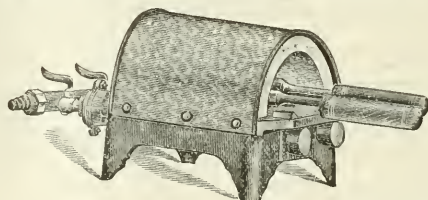
iron heater that has just been brought out by A. Weiskittel & Son, Baltimore, Md. The manufacturers allude to the

present demand for a heater of this kind on account of the requirements of the insurance companies. The furnace is

separate cocks, as shown in the illustration, so that one or two soldering irons can be heated at a time, as desired. The hood or top is made of semi-circular fire brick covered with sheet iron, which holds the heat and increases the efficiency of the burners. The device is sold at a reasonable figure, and the trade are requested to write for prices and circulars.

A trial of a Harveyized steel armor plate, manufactured by John Brown & Co. of Sheffield took place on February 12, at Portsmouth, England. The plate was selected by the Admiralty authorities from a batch of plates forming one of the barbettes of the new British battle ship "Magnificent," now building at Chatham, and had been reduced to the following dimensions: 8 feet in length, 6 feet in width, and 6 inches in thickness. Four 6 inch Holtzer projectiles were fired against the plate, with the velocities of 1807 feet, 1815 feet, 1960 feet, and 1815 feet per second respectively. All the projectiles were completely broken up, fragments of the third shot alone succeeding in just perforating the plate and lodging in the backing. The penetration in the other cases was estimated at from 2 inches to 4 inches. The trial was considered very satisfactory, the behavior of the plate being almost identical with that of the original test plate manufactured by Brown & Co., and tested in February, 1894.

As an illustration of the rapid introduction of the basic open hearth in this country, it is stated that the cargo of dead burnt Styrian magnesite received



Gas Soldering Iron Furnace.

by the Fayette Mfg. Company on the steamship "Alastis," arriving on February 15, was all sold three weeks before the arrival of the vessel. The above company have made arrangements for the receipt of this material every month, which insures fresh material and prompt shipments. This dead burnt magnesite is ground and prepared for bottoms and repairs, and is in a convenient shape for storing and using, there being no loss in transportation or handling. In the items of labor and refractories it has been shown that the small manufacturer with two open hearth furnaces using prepared magnesite is on the same basis as a larger manufacturer with a larger number of furnaces using magnesite or dolomite.

Herr Joseph Treilt, an ironmonger, of Vienna, who has just died at the age of 91, has left 800,000 florins to the Vienna Academy for the promotion of scientific research.

A very marked revival is reported in the lumber business in Tennessee, where a number of manufacturing concerns have started into operation after long seasons of idleness, and others are preparing to start.

designed with a view to give the greatest heat with the least consumption of gas. It has two burners controlled by

TRADE REPORT.

The Iron Market.

Pig Iron.—There has been no change in the situation in the New York market. Consumers are melting a fair amount of iron, but are still buying cautiously. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 3 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

The Pig Iron market in the Philadelphia district is reported as very quiet, and although the aggregate tonnage is considerable, it is taken in such a way that it is hardly noticed. Small orders frequently renewed appears to be the fashion, except when some special inducements are offered, which at the present low prices cannot be very often. The impression gains ground that higher prices for Coke and Ores are among the probabilities for the near future, but as yet it has had no influence either on producers or consumers. The former accept orders at the old figures for almost any quality that a buyer will take, while the consumers appear just as little inclined to increase their orders as they have been for months past. Sales in moderate quantities at about the following prices for Philadelphia, and from 20¢ to 30¢ less for water delivery, or at points such as York, Harrisburg, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

Business in the Chicago Pig Iron market shows some improvement over the previous week. The sellers of local irons have been particularly favored in transactions. Quite a number of sales are reported, the largest calling for 1500 tons. Southern Iron represents a much smaller quantity, the sales all told amounting to about 1000 tons. Lake Superior Charcoal has been quiet, with very little doing outside of carload lots. No changes have been made in prices, the quotations on local irons being unaffected by the recent cuts in Southern brands. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$13.00 to \$14.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch.....	10.50 to 11.00
Local Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 12.00
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.50
Southern Coke, No. 3.....	9.75 to 10.25
Southern, No. 1 Soft.....	10.25 to 10.50
Southern, No. 2 Soft.....	9.75 to 10.25
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.50 to 16.00
Other Ohio Silvery.....	14.50 to 15.00

Production in the Pittsburgh district continues very heavy, and some of the stacks are making exceptionally good records in production. In Foundry Iron the situation is unchanged. The demand is fair, and prices are about as they have been for several weeks past. We quote as follows:

No. 1 Foundry.....	\$10.50 to \$10.65 cash.
No. 2 Foundry.....	9.65 to 9.75

In the Cincinnati district contracts, ranging between 1000 and 2000 tons for delivery running through several months, have been offered to Southern furnaces at a shade under quotations, but with the increased business in sight producers are disposed to adhere even more closely to their views of a turn for the better soon, and all offers under the previously current rates have been refused. Northern Charcoal Iron, too, is meeting a better demand with some large trades pending at the moment. Western Pipe works and radiator manufacturers have been among the recent buyers, and Eastern Pipe works are said to be contemplating contracting for round amounts. There is also evidence that small buyers, while not anticipating their wants, to any great extent at least, are not running so close to shore as during the past few months, and as a result there may be less complaint regarding shipments. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The conditions governing the St. Louis Pig Iron market are practically the same as last reported. Sales have dwindled down to carload quantities with an occasional 100-ton lot. There seems to be a fair consumption, but there is not much inquiry for iron for future wants. Furnacemen seem to believe that prices at present ruling are as low as they can possibly go and are not pushing sales to any extent, preferring rather to wait and secure the advantage of advance of price, no matter how small. No. 2 Foundry continues to be quoted at \$6.75, f.o.b. cars Birmingham. The starting up of two of the local Stove foundries will help increase the consumptive demand. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Metal Market.

Pig Tin.—The sharp turn upward mentioned in our last week's report has been followed by an almost unbroken decline and shrinkage in wholesale prices, making a weak and depressed market. Probably 300 tons have changed hands in a speculative way and the average quantity has passed into final channels of distribution and into consumers' hands. The downward course of values may fairly be attributed to the natural influence of excessive supplies, assisted by comparatively unopposed "bear" operations of prominent traders. Importations have been heavy, bringing the total for this month to date up to 2307 tons and adding several hundred tons to the spot stock. There are now

about 1700 tons afloat, and it is probable that importations will exceed deliveries during the next 30 days. Straits Pig in small retail parcels is quoted at 15¢ @ 15½¢ per lb, the lower figure being the most common.

Copper.—At the lower level of prices established of late there has been more business in Ingots, chiefly purchases by home consumers, deliveries running the next two months. Ingot was offered in large lots at as low as 9.50¢ for delivery during the summer months, but without developing much buying interest. This indication of weak undercurrent to the market is not the only one. Home consumers are extremely conservative, at all events. Export trade prospects are by no means flattering, and production is proceeding at a rate that doubtless causes more or less extensive accumulation of stock in first hands. Jobbers' price for small lots of Lake Ingot from stock is about 10½¢ per lb.

Sheet Copper.—A moderate volume of inquiry is noted; but, although the feeling among consumers is regarded as better, the actual amount of buying is in the aggregate below par. Small lots of Sheet Copper are quoted by jobbers at 14¢ per lb, net.

Pig Lead.—There have been forced sales of a few carloads of Common Domestic, under the influence of which the price went down with very slim results in the way of business. As thus tested, the market is a weak one for sellers. Large consumers seem disinclined to purchase here or in the West except at a lower level of values, and the smaller ones are buying in a hand-to-mouth way only, pending developments. As for speculative interest, there appears to be none aside from remnants of old deals. American in small lots from store is quoted at 3½¢ @ 3¼¢ per lb.

Lead Pipe and Sheet.—No tangible improvement is to be recorded in the demand for manufactured Lead. Buying is still in the nature of small purchases for present needs alone. Prices in this section are maintained at the list rate, namely, 5½¢ for Pipe and 6¼¢ for Sheet, with 20¢ discount.

Spelter.—No improvement in the volume of business or in the demand has taken place here. The larger movement is still almost wholly on orders calling for a few carloads at a time or single carloads, and the demand is wholly bare of spirit. Jobbers also report a very tame demand for small parcels, for which they quote 3½¢ @ 4¢ per lb for Western brands.

Antimony.—The jobbing trade has been fair, but the movement otherwise is still light. Prices remain at about 8¢ for Hallett's and 9¼¢ for Cookson's, in small lots from store.

Nickel.—Sellers quote at about 35¢ @ 40¢, according to size of lot.

Tin Plate.—Coke Plates for forward delivery have been the only really redeeming feature of the market during the week. These have met with very fair sale, the requirements of canners in

some quarters being imperative. Spot sales of the same have also been somewhat better. However, the entire dealings are doubtless of very moderate average for this season of the year, and have not been of sufficient magnitude to put any backbone into prices, which still remain somewhat weak and irregular. Bright Charcoals are selling in moderate quantities only, and the demand for Ternes has been greatly restricted throughout the country by the severe weather and the general condition of the roads, &c. The outlet for Ternes is supplied almost wholly by American mills. Advances of severe depression on the other side, accompanied by heavy failures in the Tin Plate trade and the consequent closing down of works, has induced the impression that the restricted production resulting may bring about a stiffening in prices. But the late starting into operation of a strong force of American works is likely to neutralize this.

The condition of the British Tin Plate market is thus described in a special London cable dispatch of February 27 to *The Iron Age*: Tin Plate has continued slow. Transactions limited to small lots, chiefly for Russia and 'Frisco. Only a moderate forward business has been done. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20.....	9/	@	9 11/16
Siemens Cokes, IC 14 x 20.....		@	9 11/16
Ternes, 20 x 28.....	18/	@	23/
Charcoals, IC 14 x 20.....	10/6	@	13/

Sheet Iron.—Spot business in both Black and Galvanized Sheets is quiet, but a large number of orders are being placed with mills for deliveries extending over the next three months. Some makers are, however, refusing to book orders very far ahead at present prices. The demand for light Black Plate for tinning purposes is referred to as excellent. Prices on both Black and Galvanized Iron exhibit no improvement, however. Jobbers' quotations for small lots of No. 27 Common Iron from store rule at about 2.65¢. Galvanized Sheets in similar quantities are quoted at the discount of 75 and 5 ¢ @ 75 and 10 ¢ off.

The United States Geological Survey, C. Kirchhoff, agent, has issued the following preliminary statement of the production of Spelter, the unit being the short ton of 2000 pounds:

<i>Production of Spelter.</i>			
States.	1894.	1893.	1892.
Eastern.....	7,400	8,802	9,582
Southern.....	1,876	3,182	4,913
Illinois and Indiana.....	28,972	29,596	31,393
Kansas.....	25,188	22,815	24,715
Missouri.....	11,992	13,737	16,067
Totals.....	75,328	78,832	87,260

A partial statement of stocks shows that stocks increased from 4562 tons on January 1, 1894, to 4911 tons on January 1, 1895.

Chicago Report.

Scrap.—Everything has been quiet the past week. Dealers quote their buying prices as follows, Chicago delivery:

	Per unit ton. Per lb
No. 1 Wrought Scrap.....	\$6.50
Machinery Cast.....	5.50
Malleable Cast.....	5.00
Stove Plate (free of burnt).....	4.00
Burnt Iron and Grate Bars.....	3.00
Sheet Iron and Hoops.....	2.00
Pig Steel and Breaking Stock.....	4.00
No. 2, such as Shovels, Hoes, &c.....	3.00
Old Boilers—whole (Iron) (iron)—cut in single Sheets and Ribs.....	5.00
Old Gas-Pipe and Boiler Tubes.....	5.00

Cast Borings.....	3.00	.....
Turnings.....	4.00	.....
Horsehoes.....	7.50	.....
Copper Bottoms.....		6 1/2
Copper Clips and Heavy.....		7 1/2
Heavy Brass.....		6 1/2
Light Brass.....		3
Pipe Lead.....		2 1/2
Tea Lead.....		2
Zinc.....		2 1/2
Rubber.....		4

Anthracite. — Business has again lapsed into dullness. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Stone,
	Grate, and Ch.
Chicago, Ill.	\$4.75 \$5.00
Milwaukee, Wis.	4.75 5.00
Kansas City, Mo.	7.95 8.20
Council Bluffs, Iowa.	7.95 8.20
Lincoln, Neb.	8.10 8.35
St. Louis City, Iowa.	7.95 8.20
Aberdeen, S. Dak.	8.00 8.25
Dubuque, Iowa.	6.05 6.30
Madison, Wis.	6.25 6.50
St. Paul, Minn.	7.25 7.50
Burlington, Iowa.	6.25 6.50
Des Moines, Iowa.	7.75 7.95
Dayton, O.	6.30 6.55
St. Joseph, Mo.	7.95 8.20
Leavenworth, Kan.	7.95 8.20
Omaha, Neb.	7.95 8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.50

CONDITION OF THE

Hardware Trade.

AS FEBRUARY draws to a close some houses report a gratifying increase in the volume of business, while with other trade does not yet manifest marked improvement. Travelers, however, are quite generally on the road, and the result of their efforts is the securing of a number of orders, which for the most part are carefully assorted and not specially large. They, however, in the aggregate undoubtedly cover considerable quantities of goods, and are sufficient to meet the immediate requirements of the purchasers. Both retailers and jobbers are apparently disposed to let the manufacturer carry the stocks from which purchases are to be made as necessary. Prices do not show any material change, and the market continues in a somewhat unsettled condition. Collections are fairly good.

Advice from Chicago.—Shelf Hardware has been affected to a considerable extent by the milder weather. Orders have been very much more numerous within the past four or five days, and the character of goods now in demand shows that outdoor work has begun to be prosecuted with some vigor. Important sections of the Northwest are still ice bound and it will be some little time before general outdoor work is in full swing. The trade has not yet recovered from the demoralization of Wire Nall prices by Chicago jobbers, and this matter will, perhaps, have to be settled before trade gets into a thoroughly satisfactory condition. The outlook continues to improve steadily, however, and jobbers here are looking forward to an excellent month's business in March. The Heavy Hardware trade shows some falling off in consequence of the change from winter weather and the diminished demand for winter goods. Collections have improved.

Notes on Prices.

Wire Nails.—Considering the disturbance which results from the active competition between two of the leading jobbing houses, the Wire Nail market continues in excellent condition, and most of the manufacturers are firmly holding to the advanced prices which for the past week or two have been ruling. There is a good deal of inquiry and negotiation, and a good many orders have been placed. As a result the mills are well occupied for some time to come.

Advice from Chicago.—Large orders have recently been placed by outside jobbers who evidently believe that this is a good time to secure additional stock for their spring trade. Inquiries are growing better as manufacturers are seen to maintain a firm stand. The carload price has recently been advanced to \$1.05 Chicago by manufacturers. This is 10 cents per keg higher than quotations made by two Chicago jobbing houses, who continue to maintain the fight which has been in progress here for the past several weeks. It is claimed that the end of this fight is now drawing near, as their contracts with mills are rapidly being taken out.

Cut Nails.—There has been only a moderate movement in Cut Nails the past week, but the mills report more frequent inquiries and refer to the indications of a fair business as the spring opens. Quotations are unchanged. Small lots from store, in New York, are held at 85 to 90 cents.

Advices from Chicago.—Manufacturers report very little trade in progress. Jobbers quote small lots at \$1 from stock.

Barb Wire.—The Barb Wire market is steady, with an increasing volume of business. There is little doubt that the situation would be more completely satisfactory were it not for the disposition on the part of some of the jobbing houses who have large orders in at relatively low figures to undersell the prices which the manufacturers are now disposed to maintain firmly. Small lots of Four-Point Galvanized from store are held at \$2.10 to \$2.15.

Advice from Chicago.—Manufacturers are enjoying a good trade from many parts of the West and their business steadily improves as milder weather penetrates to more Northern districts. They expect to do a much larger business in March than ever before. The Chicago jobbers who are making low prices on Wire Nails' also quote \$1.55 for Painted and \$1.90 for Galvanized. Small lots from stock are quoted at \$1.65 for Painted and \$2 for Galvanized.

Pneumatic Pump.—The Pneumatic Wall Pump put on the market by Hulbert Bros. & Co., 26 West Twenty-third street, New York, is sold to the trade at \$18 net.

Lawn Mowers.—We are advised by S. A. Haines, who represents the Dille & McGuire Mfg. Company, Richmond, Ind., as manager of sales, that about March 20 they will advance their prices about 10 per cent. They refer to having largely oversold the production of any former year, and make this advance in view of the unnecessarily low prices now ruling on Lawn Mowers.

Glass.—The meeting of the Glass manufacturers held at Columbus, Ohio, on the 21st inst. did not result in any definite action being taken, but was

adjourned to meet at Pittsburgh on February 28. The condition of the market remains unchanged since our report last week, both in regard to prices and demand; while jobbers and manufacturers are awaiting anxiously the developments of the coming spring. New York quotations for American Window Glass in small lots are as follows: Single Strength, 85 and 10 to 85 and 15 per cent. discount; Double Strength Glass, 85 and 20 per cent. discount.

Old Metals.—The demand is still quite moderate, but there are indications of a recovering interest in some quarters which point to probable improvement in business in this line within a reasonable period. Some good orders have been taken by Scrap Iron dealers for certain qualities of Old Iron. Prices show no quotable change, the following quotations representing about the current rates paid by dealers in this city:

Heavy Copper.....	lb 7 c	
Light and Tinned Copper.....	lb 6 1/2 c	
Heavy Brass.....	lb 4 3/4 c	
Light Brass.....	lb 3 3/4 c	
Lead.....	lb 2 1/2 c	
Tea Lead.....	lb 2 1/2 c	
Zinc.....	lb 2 1/2 c	
No. 1 Pewter.....	lb 10 c	
No. 2 Pewter.....	lb 8 1/2 c	
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00	
Heavy Cast Scrap.....	gross ton 7.50 @ 8.50	
Stove Plate Scrap.....	gross ton 5.00	
Burnt Iron.....	gross ton 3.00	

Old Rags, Paper, &c.—The market is quiet, demand moderate and business not active. Dealers' purchasing prices remain at virtually the same figures as formerly quoted, namely:

No. 1 White Rags.....	lb 3 @ 3 1/2 c	
No. 2 White Rags.....	lb 2 1/2 @ 2 1/2 c	
Mixed Rags.....	lb 1 @ 1 c	
Blues and Sds.....	lb 1 1/2 @ 1 1/2 c	
Hard Sized White Shavings.....	lb 2 1/2 @ 2 1/2 c	
No. 1 White Book Shavings.....	lb 1 1/2 @ 1 1/2 c	
No. 2 White Book Shavings.....	lb 1 @ 1 c	
Light Book Shavings.....	lb 1/2 @ 1/2 c	
No. 1 Mixed Shavings.....	lb 1/2 @ 1 c	
No. 2 Mixed Shavings.....	lb 1/2 @ 1/2 c	
No. 1 Printed Books.....	lb 1 @ 1 1/2 c	
Ordinary Mixed Books.....	lb 1/2 @ 1/2 c	
Newspapers.....	lb 1/2 @ 1/2 c	
No. 1 Manila Paper.....	lb 3/4 @ 1 c	
No. 2 Manila Paper.....	lb 1/2 @ 1/2 c	
Bogus Paper.....	lb 1/2 @ 1/2 c	
Common Paper.....	lb 1/2 @ 1/2 c	
Straw Chips.....	lb 1/2 @ 1/2 c	
Binders' Clippings.....	lb 1/2 @ 1/2 c	
Butts.....	lb 1 1/2 @ 1 1/2 c	
No. 1 Jute Bagging.....	lb 1 @ 1 1/2 c	
Mixed Bagging.....	lb 1/2 @ 1 c	
No. 2 Bagging.....	lb 1/2 @ 1/2 c	
Hemp Twine.....	lb 2 @ 2 1/2 c	
Manila Rope.....	lb 2 @ 2 1/2 c	
Jute Rope.....	lb 1 1/2 @ 1 1/2 c	
Mixed Rope.....	lb 1/2 @ 1/2 c	

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots.....	lb. \$.03 1/2 @ .04	
Rubber Shoes, carloads, delivered at factory.....	lb. @ .05 1/2	
Rubber Shoes, less than carloads.....	lb. @ .04 1/2	
White Wringer Rolls.....	lb. @ .03 1/2	
White Springs.....	lb. @ .03 1/2	

THE QUICK SHINE COMPANY, St. Louis, have placed on the market a stove blacking which bids fair to prove popular from the fact that it not only blackens the stove but will also polish the nickel. The polish is put up in tin boxes with an attractive label and is advertised as "the best on earth." The mode of operation is to apply it with a damp woolen cloth and rub the parts to which the polish has been applied with a dry cloth. The Donnell Mfg. Company, 612 South Sixth street, St. Louis, Mo., are the distributing agents.

Trade Notes.

THE JOEL HAYDEN BRASS WORKS, at Lorain, Ohio, owned by the United States Brass Company of Connecticut, was sold by the sheriff last week. The appraised value of the plant and 60 acres adjoining was \$185,000. The property brought \$141,000. The purchasers were Hon. H. S. Hoyt, Charles F. Mathewson and Edgar Woodman, trustees of the bondholders.

THE MUTUAL GAS SAVING COMPANY, for utilizing a patented invention for saving gas, has been incorporated at Baltimore, Md., by Henry S. Cunnare, Cooper Lyons, John J. Myers, John A. Blondell and Michael A. McCormick, with a capital stock of \$50,000.

THE NEW YORK STAMPING COMPANY of Brooklyn received a charter of incorporation this week. The company, whose capital is placed at \$30,000, will manufacture metal goods. Directors are James Edgar and W. A. Bardell of Brooklyn, and J. F. Pierson of New York City.

THE LOS ANGELES IRON & STEEL COMPANY of Los Angeles, Cal., recently placed an order for 600 tons of steel billets at Pittsburgh, Pa., to be used in the manufacture of light plates and sheets.

A. C. DALLAS & Co., 79 Lake street, Chicago, have been appointed Western agents for the Benedict & Burnham Mfg. Company, manufacturers of Seamless Brass and Copper Tubes, Brazed Tubes, Sheet Brass, Rods, &c.

FRED. BLEMLY, 151 Fulton street, New York, makes a specialty of fine metal chasing. He is now completing a set of fine brass patterns for a fire-place lining and borders to match. He also does mold making, die sinking, and makes steel, brass and rubber stamps.

THE WORKS of the Chicago Pipe Company, New Philadelphia, Ohio, were burned down on February 28. The loss is estimated at \$100,000, partly covered by insurance.

ALUMINUM AND ALLOY METAL WORKS of Peru, Ind., have been incorporated, with a capital stock of \$45,000. The directors are James O. Cole, R. A. Edwards, C. C. Emawiller, R. H. Bouslog, W. J. Wilder, L. B. Jenks.

EVEN those who are not in any way interested in buying Ice Cream Freezers should turn over our advertising pages to the announcement of the S. C. Tatum Company of Cincinnati, Ohio, for the pleasure of seeing the three Ethiopians eat ice cream made in the Ohio Freezer.

AMONG the special advertisements to be found in this issue of *The Metal Worker* is one giving a list of tinners' supplies and tools together with the prices. It is a special sale and any tinners or others having use for such materials and machines will be interested in the sale.

The statistics of metallurgical production in Belgium in 1894 show that the amount of pig iron manufactured was 810,940 tons, being an increase upon the previous year of 65,676 tons. Rails and sheets amounted to 123,474 tons, as against 118,602 tons in 1893, and other iron 330,917 tons, as compared with 371,119 tons. The production of steel ingots in 1894 was 396,914 tons, as against 373,113 tons, and steel rails, sheets, &c., 344,766 tons, as compared with 234,622 tons.

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Metal and Miscellaneous Prices.

CHICAGO, FEBRUARY 28, 1895.

Tin—

Small pigs 15 1/2¢

Imported Tin Plates—

Charcoal Plates—Bright.

Guaranteed Plates command special prices, according to quality.

IC, 10 x 14.....	\$5.75
IC, 12 x 12.....	\$5.75
IC, 12 x 14.....	\$5.75
IC, 12 x 16.....	\$5.75
IC, 10 x 20.....	\$11.50
IC, 12 x 20.....	\$7.50
IC, 14 x 20.....	\$7.50
IC, 16 x 20.....	\$9.25
IC, 18 x 20.....	\$11.00
IC, 20 x 20.....	\$12.75
IC, 22 x 20.....	\$16.00
IC, 24 x 20.....	\$18.50
IC, 26 x 20.....	\$22.00
IC, 28 x 20.....	\$25.00
IC, 30 x 20.....	\$28.00
IC, 32 x 20.....	\$31.00
IC, 34 x 20.....	\$34.00
IC, 36 x 20.....	\$37.00
IC, 38 x 20.....	\$40.00
IC, 40 x 20.....	\$43.00
IC, 42 x 20.....	\$46.00
IC, 44 x 20.....	\$49.00
IC, 46 x 20.....	\$52.00
IC, 48 x 20.....	\$55.00
IC, 50 x 20.....	\$58.00
IC, 52 x 20.....	\$61.00
IC, 54 x 20.....	\$64.00
IC, 56 x 20.....	\$67.00
IC, 58 x 20.....	\$70.00
IC, 60 x 20.....	\$73.00
IC, 62 x 20.....	\$76.00
IC, 64 x 20.....	\$79.00
IC, 66 x 20.....	\$82.00
IC, 68 x 20.....	\$85.00
IC, 70 x 20.....	\$88.00
IC, 72 x 20.....	\$91.00
IC, 74 x 20.....	\$94.00
IC, 76 x 20.....	\$97.00
IC, 78 x 20.....	\$100.00
IC, 80 x 20.....	\$103.00
IC, 82 x 20.....	\$106.00
IC, 84 x 20.....	\$109.00
IC, 86 x 20.....	\$112.00
IC, 88 x 20.....	\$115.00
IC, 90 x 20.....	\$118.00
IC, 92 x 20.....	\$121.00
IC, 94 x 20.....	\$124.00
IC, 96 x 20.....	\$127.00
IC, 98 x 20.....	\$130.00
IC, 100 x 20.....	\$133.00
IC, 102 x 20.....	\$136.00
IC, 104 x 20.....	\$139.00
IC, 106 x 20.....	\$142.00
IC, 108 x 20.....	\$145.00
IC, 110 x 20.....	\$148.00
IC, 112 x 20.....	\$151.00
IC, 114 x 20.....	\$154.00
IC, 116 x 20.....	\$157.00
IC, 118 x 20.....	\$160.00
IC, 120 x 20.....	\$163.00
IC, 122 x 20.....	\$166.00
IC, 124 x 20.....	\$169.00
IC, 126 x 20.....	\$172.00
IC, 128 x 20.....	\$175.00
IC, 130 x 20.....	\$178.00
IC, 132 x 20.....	\$181.00
IC, 134 x 20.....	\$184.00
IC, 136 x 20.....	\$187.00
IC, 138 x 20.....	\$190.00
IC, 140 x 20.....	\$193.00
IC, 142 x 20.....	\$196.00
IC, 144 x 20.....	\$199.00
IC, 146 x 20.....	\$202.00
IC, 148 x 20.....	\$205.00
IC, 150 x 20.....	\$208.00
IC, 152 x 20.....	\$211.00
IC, 154 x 20.....	\$214.00
IC, 156 x 20.....	\$217.00
IC, 158 x 20.....	\$220.00
IC, 160 x 20.....	\$223.00
IC, 162 x 20.....	\$226.00
IC, 164 x 20.....	\$229.00
IC, 166 x 20.....	\$232.00
IC, 168 x 20.....	\$235.00
IC, 170 x 20.....	\$238.00
IC, 172 x 20.....	\$241.00
IC, 174 x 20.....	\$244.00
IC, 176 x 20.....	\$247.00
IC, 178 x 20.....	\$250.00
IC, 180 x 20.....	\$253.00
IC, 182 x 20.....	\$256.00
IC, 184 x 20.....	\$259.00
IC, 186 x 20.....	\$262.00
IC, 188 x 20.....	\$265.00
IC, 190 x 20.....	\$268.00
IC, 192 x 20.....	\$271.00
IC, 194 x 20.....	\$274.00
IC, 196 x 20.....	\$277.00
IC, 198 x 20.....	\$280.00
IC, 200 x 20.....	\$283.00
IC, 202 x 20.....	\$286.00
IC, 204 x 20.....	\$289.00
IC, 206 x 20.....	\$292.00
IC, 208 x 20.....	\$295.00
IC, 210 x 20.....	\$298.00
IC, 212 x 20.....	\$301.00
IC, 214 x 20.....	\$304.00
IC, 216 x 20.....	\$307.00
IC, 218 x 20.....	\$310.00
IC, 220 x 20.....	\$313.00
IC, 222 x 20.....	\$316.00
IC, 224 x 20.....	\$319.00
IC, 226 x 20.....	\$322.00
IC, 228 x 20.....	\$325.00
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IC, 232 x 20.....	\$331.00
IC, 234 x 20.....	\$334.00
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IC, 256 x 20.....	\$367.00
IC, 258 x 20.....	\$370.00
IC, 260 x 20.....	\$373.00
IC, 262 x 20.....	\$376.00
IC, 264 x 20.....	\$379.00
IC, 266 x 20.....	\$382.00
IC, 268 x 20.....	\$385.00
IC, 270 x 20.....	\$388.00
IC, 272 x 20.....	\$391.00
IC, 274 x 20.....	\$394.00
IC, 276 x 20.....	\$397.00
IC, 278 x 20.....	\$400.00
IC, 280 x 20.....	\$403.00
IC, 282 x 20.....	\$406.00
IC, 284 x 20.....	\$409.00
IC, 286 x 20.....	\$412.00
IC, 288 x 20.....	\$415.00
IC, 290 x 20.....	\$418.00
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IC, 294 x 20.....	\$424.00
IC, 296 x 20.....	\$427.00
IC, 298 x 20.....	\$430.00
IC, 300 x 20.....	\$433.00
IC, 302 x 20.....	\$436.00
IC, 304 x 20.....	\$439.00
IC, 306 x 20.....	\$442.00
IC, 308 x 20.....	\$445.00
IC, 310 x 20.....	\$448.00
IC, 312 x 20.....	\$451.00
IC, 314 x 20.....	\$454.00
IC, 316 x 20.....	\$457.00
IC, 318 x 20.....	\$460.00
IC, 320 x 20.....	\$463.00
IC, 322 x 20.....	\$466.00
IC, 324 x 20.....	\$469.00
IC, 326 x 20.....	\$472.00
IC, 328 x 20.....	\$475.00
IC, 330 x 20.....	\$478.00
IC, 332 x 20.....	\$481.00
IC, 334 x 20.....	\$484.00
IC, 336 x 20.....	\$487.00
IC, 338 x 20.....	\$490.00
IC, 340 x 20.....	\$493.00
IC, 342 x 20.....	\$496.00
IC, 344 x 20.....	\$499.00
IC, 346 x 20.....	\$502.00
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IC, 350 x 20.....	\$508.00
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IC, 354 x 20.....	\$514.00
IC, 356 x 20.....	\$517.00
IC, 358 x 20.....	\$520.00
IC, 360 x 20.....	\$523.00
IC, 362 x 20.....	\$526.00
IC, 364 x 20.....	\$529.00
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IC, 368 x 20.....	\$535.00
IC, 370 x 20.....	\$538.00
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IC, 374 x 20.....	\$544.00
IC, 376 x 20.....	\$547.00
IC, 378 x 20.....	\$550.00
IC, 380 x 20.....	\$553.00
IC, 382 x 20.....	\$556.00
IC, 384 x 20.....	\$559.00
IC, 386 x 20.....	\$562.00
IC, 388 x 20.....	\$565.00
IC, 390 x 20.....	\$568.00
IC, 392 x 20.....	\$571.00
IC, 394 x 20.....	\$574.00
IC, 396 x 20.....	\$577.00
IC, 398 x 20.....	\$580.00
IC, 400 x 20.....	\$583.00
IC, 402 x 20.....	\$586.00
IC, 404 x 20.....	\$589.00
IC, 406 x 20.....	\$592.00
IC, 408 x 20.....	\$595.00
IC, 410 x 20.....	\$598.00
IC, 412 x 20.....	\$601.00
IC, 414 x 20.....	\$604.00
IC, 416 x 20.....	\$607.00
IC, 418 x 20.....	\$610.00
IC, 420 x 20.....	\$613.00
IC, 422 x 20.....	\$616.00
IC, 424 x 20.....	\$619.00
IC, 426 x 20.....	\$622.00
IC, 428 x 20.....	\$625.00
IC, 430 x 20.....	\$628.00
IC, 432 x 20.....	\$631.00
IC, 434 x 20.....	\$634.00
IC, 436 x 20.....	\$637.00
IC, 438 x 20.....	\$640.00
IC, 440 x 20.....	\$643.00
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IC, 678 x 20.....	\$1000.00
IC, 680 x 20.....	\$1003.00
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THE METAL WORKER.

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Quality of Tin Roofs.

We commend to the attention of all of our readers who are interested in the subject of metal roofing a letter printed in our correspondence department of this issue from a firm signing themselves "Experience." The question touched upon is a vital one for the continuance of the tin roof trade. The inspiration of the communication was a letter we recently published in which occurred the statement that tin roofs could be put on at a profit at four cents per foot, and also that gravel roofs were largely used in the district in the South from where the letter was written. The communication to which we direct attention comments very seriously and earnestly on the present situation. The writers point out that it is no wonder that gravel roofs are being specified when the normal metal roof is a four cent a foot roof. At that price they say that only a waster can be used, and a waster furthermore of a very poor quality. We need not go over all the points of the letter, but we mention it here that attention may be directed to it. The argument of the whole communication is against the use of too cheap plates. The subject of acid made plates as against palm oil process ones is touched upon, and the sensible advice is given to the trade that the property owner should be educated to appreciate the value of a good roof and to demand it; that competition be not permitted to run on recklessly to the utter destruction of the trade in good plates, but that the house owner be taken into confidence and persuaded that his best interests are served by putting a little more money at the outset into the roof covering. We wish this subject might start correspondence from other persons in the trade, both dealers and roofers, for the benefit from such a discussion would inure to all concerned.

The Kitchen of the Future.

In the designing of buildings intended for living purposes one of the features which often fails to receive the attention its importance warrants is the kitchen. The idea seems to prevail in many quarters that this department of the household can be located almost anywhere without much regard to light, ventilation or convenience of access. It may be stated without fear of contradiction that in a majority of the flats and apartment buildings of the large cities of the country, and frequently in private houses as well, the kitchen occupies a damp basement or remote corner of the building, with little or no provision for ventilating the room of the vapors arising from cooking, and often so dark that it is necessary to keep the gas lighted during the day as well as at night. Under such conditions it is not surprising that the lives of cooks are short compared with those engaged in other indoor occupations. The many and serious objections urged against this condition of things in the course of time caused efforts to be made to remedy the difficulties. Some of the results are seen in connection with a few of the more expensive apartment houses, hotels and clubs, where the kitchen is located at the top of the building. In this position there is an abundance of light and ventilation, while the odors and vapors arising from cooking operations can be readily carried away without annoying the occupants of the floors below. Ever since this plan was tried some little thought has been given to applying the feature to private houses. It is as yet in an experimental stage, but probably when electricity becomes more generally employed for domestic purposes, the kitchen at the top of the house will be regarded as common practice.

Sanitary Aspects.

Apropos of the above it is interesting to note that the Society of Cooks in Paris lately secured the services of an eminent physician to investigate the causes of the alarming mortality in their profession. He declares that the kitchens of Paris are the foulest portions of the houses, and that their occupants are subject to a multitude of disorders, which would be immensely reduced if the kitchens received a proper supervision on sanitary lines. One of the remedies proposed consists in increasing the size of the kitchen and removing from its vicinity larders, sculleries, sleeping rooms and water closets. A writer discussing the principles of kitchen sanitation states that "they

can be applied to any house by a little study of material at hand. Oil cloth or linoleum should cover a wood floor, zinc or oil cloth should be placed over shelves and tables, and every vestige of carpet or rug relegated to some other place from that in which the food is prepared. Better, of course, than all this is to have put in new floors and walls of tiles or marble in the kitchen or pantry. Expenditure here would be of greater value than in the parlor if both could not be afforded."

Some American Kitchens

In marked contrast with the French kitchens, as well as some to be found in many German houses, are those of many of our modern American homes, where vaulted roofs, swell ends that take up the greater portion of the back yard, tiled or marble walls, inlaid floors, open plumbing and the latest features in ventilation make the word "kitchen" a poor term to apply to these places. In a beautiful mansion recently completed in this city the kitchen has a ceiling fully 15 feet in height; the floor is inlaid with chips of marble, the walls are tiled and there is scarcely a strip of wood to be found outside of doors and frames of the china closets. Under a set of cupboards, which stand perhaps 3 feet from the floor and are 10 feet wide, the space is lined with marble and fitted with marble shelving. Every corner of the kitchen is light, the water pipes run outside the walls in stacks of six and eight lines and the nickel plated stop cocks are readily accessible at all times. In the butler's pantry adjoining are marble shelves, tiled wainscoting, inlaid floors and tables covered with zinc for draining dishes and keeping food while serving the table.

This is beyond question the era of mammoth department stores. Announcement is made of the completion of arrangements whereby the well-known Chicago dry goods firm of Siegel, Cooner & Co. will erect this summer in New York City a huge establishment of this kind uptown, which will be larger and more complete than any similar undertaking in the world, not excepting the Bon Marché in Paris and Whiteley's in London. The firm have purchased and acquired on long lease a property occupying one-half of an entire block on Sixth avenue, between Eighteenth and Nineteenth streets, the plot of ground having an area of 85,560 feet. The cost of the ground and buildings is estimated at not less than \$4,000,000.

The passing out of existence of the Fifty-third Congress of the United States, on Monday, was contemplated with unfeigned satisfaction by the public at large.

THE LETTER BOX.

Cold Air Box and Filter.

From C. E. S., *Wheeling, W. Va.*—In perusing the columns of *The Metal Worker* the inexhaustible and probably seasonable question at the present time (the cold air box) bids us earnestly with curious antics. Our friend "J. L." of Pittsburgh in *The Metal Worker* of February 2 says, referring to his cold air duct, "if under the influence of some winds the hot air is inclined to be discharged out of the cold air box," &c. I would merely ask what causes some winds to come out of the cold air box? I think "J. L." has a very convenient duct, and if he wants to filter his air I think he can get good results by enlarging his duct from the bottom of the ash to the floor to about five times the original size arranged along the wall to suit convenience. He should then provide a series of three or four vertical slots provided with necessary guide strips. He should then make corresponding frames covered tightly with cheese cloth and insert them in the slots, thus closing up the cold air box. It is better to have a general door so that these can be taken out and dusted off about once a week or more as needed.

Why Did It Collapse?

From H. S. B., *Oswego, N. Y.*—Will some of the readers of *The Metal Worker* state if they ever had a water boiler collapse? I have just had such an experience with a boiler made of copper that was considered first class. It occurred in the day time and was nearly full at the time. It assumed a shape resembling an hour glass. What was the cause of the collapse and the loud report?

Note.—We shall be glad to have our readers discuss this subject. The source of water supply not being known it is fair to assume that it is not very strong in pressure, as the boiler does not seem to have been reinforced to withstand either inward or outward pressure. Under such conditions heavy firing would generate steam to an extent that water would be forced out of the boiler back into the supply pipe. If the boiler became partly filled with steam and then the steam condensed instantly, a partial vacuum would result before water in sufficient quantity could enter to fill it. These conditions would bring a heavy pressure to bear on the outside of the boiler, which being made of light copper would collapse. Another cause that might effect the collapse in siphonage. If a faucet on the system below the boiler was opened when the supply was temporarily shut off it would draw the water from the boiler by siphonage if there was no hole at the top of the delivery tube in the boiler or it had become closed. Then as soon as the boiler was partly empty the pressure of the atmosphere of 14 pounds to the square

inch on the boiler would cave it in. A safety valve which will permit steam to escape when a pressure stronger than the supply pressure was developed would overcome one trouble, and a vacuum valve that would open to let in air in case of siphonage would dispose of the other. Some correspondence on this subject will be found in *The Metal Worker* of February 10 and March 3, 1894. It is also treated in "Kitchen Boiler Connections."

A Few Remarks on Ventilating and Cold Air Supply for Hot Air Furnaces.

From M. I. C., Jr.—The ventilating system and cold air supply of the present time are about the only drawbacks that the manufacturers of furnaces have to contend with. How many furnaces are condemned on those very accounts. Where good results are not secured it is always laid to the poor working of the furnace, while, if the cause of the trouble was looked into by some one experienced, it would be found, in nine times out of ten, that it was in the poor ventilation of the building and the cold air supply to the furnace. How many times will we see a church or a private building where the furnace obtains the supply of cold air from the cellar or the floor above heating the same air over time after time until it becomes so foul in the room that a window or door is opened to let in fresh air. Some think that the furnace is being run too hard, which is not the case. It is the constant inhaling and exhaling of foul air and heating of the same air over and over again. In order to have a constant supply of both warm and fresh air we must take the cold air from outside the building and not from the damp cellars or from floors, where many of the impurities of the air settle. We must have ventilating flues built in the walls, and by placing openings into them as near the floor as possible provision is made for the foul air to escape, which will permit a constant supply of both warm and fresh air to enter. A building that is well ventilated is already half heated before starting a fire in the furnace. Why is it not just as necessary to have a system of ventilating and make provision for a supply of fresh cold air from outside the building as it is to have a system of plumbing?

Wants Cement for Marble and Basins.

From E. S. N., *Westminster, Md.*—Will some reader of *The Metal Worker* tell me of a good cement for joining marble and basins to marble slabs? I have used putty and several other materials mixed with oil, and they leave a dark oily mark on the marble. I have also used plaster of paris, which breaks out quickly and is of no value. I shall be glad to see a good cement given by some one who prizes *The Letter Box*.

Frozen Wind Mill Tanks.

From G. D. H., *New York*.—In answer to "W. A. F." Matsawan, N. J., whose letter appeared in *The Metal Worker* March 2. The exposed bottom sections of wooden tanks favor the loss of heat in freezing weather by their water soaked condition, which makes them good conductors, making their exposure nearly equal to iron tanks for liability to freeze in very cold weather. The freezing during very cold nights is also promoted by the disuse of water and its quiet condition in the tank and pipes. For a temporary expedient for preventing freezing the water should be allowed to waste slowly during very cold weather and the mill allowed to run to supply the waste. If the mill is a self regulating one, it will take care of itself with one bibb in the house partially open. The severest weather of the past season has been on windy nights, when wind mills will run strong and allow enough waste to prevent freezing in tank and pipes. This method is largely practiced in extremely cold weather for protecting exposed water pipes to the discomfort of water supply companies. As a permanent relief, the only safety is in protecting the tank and main pipes thoroughly, which can be done by a tight board ceiling under the tank bearing beams, filling the spaces between the tank bottom and ceiling with hay or other non-conducting material and closing up all outside openings beyond the line of the stoves and also by increasing the thickness of the covering on the pipe. For ordinary winters in this latitude, this should be sufficient protecting; for colder latitudes, the whole tank should be housed in, as is recommended for iron and steel tanks. All tanks should be covered with a wind tight roof.

Wants to Remove Letters from Glass.

From F. B. H., *Aberdeen, S. D.*—Will some reader of *The Metal Worker* inform me how to remove metal buttons from a plate glass window which have been cemented on with *Stratena*, without injury to the plate?

Heating From Range.

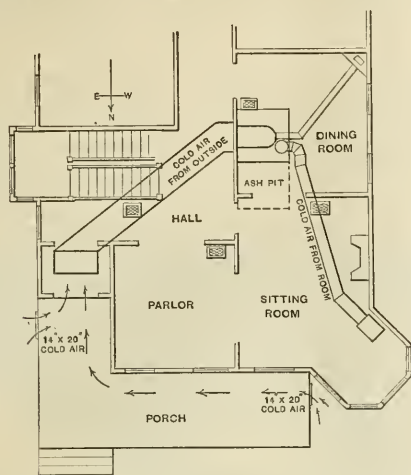
From H. L. E., *Wahpeton, N. D.*—In *The Metal Worker* of February 23 I see a communication from "B. M. C.," Hoboken, N. J., in which he claims that a three-story house is heated from a range and small boiler. If he can give me the size of the boiler, position as respecting range and manner of placing coil, I will consider it a great favor. I am interested in any system of hot water heating which will give satisfactory and economical results. I am afraid his system would not give satisfaction during 40° below zero weather such as we have here.

Note.—We will be glad to illustrate and describe the system mentioned by "B. M. C.," and hope he will furnish the material.

A Peculiar Furnace Experience.

From C. S., Cleveland, Ohio.—We placed a furnace in a house in our city six years ago, and a furnace never

supplied with cold air by means of a duct leading from under a veranda, which has 14 x 20 inch openings at the east and west ends, and which has the floor laid with spaces between the boards for the admission of more air.



A Peculiar Furnace Experience.—Fig. 1.—Showing Sitting Room and Cold Air Pipe

worked better. This year the owner felt cold drafts in his sitting room at the floor. We informed him that we could draw the cold out of the room by putting a register in the floor and run-

The duct leads to a pit under the furnace, entering at the front under the ash pit, as shown in Fig. 3, which is a plan view. In using the furnace only three of the pipes are in use all of the time, two others are partly open and five of the pipes are scarcely ever used. One of the pipes that is not used leads to the first floor, all the others not used lead to the second floor. The room in which the trouble occurs is 14 x 19 feet, with a 10 foot 4 inch ceiling, and has a fire place in it. We placed a 14 x 20 inch register in the floor in the bay window, and ran a 14 inch pipe from it to the furnace, entering near the bottom and turning up 18 inches, but warm air came out of the register. We then added enough pipe inside of the furnace to bring the end up near the top of the chamber, with no better success. A section of the pipe was then taken off and a tapering piece, from 14 to 9 inches, was added, with a Globe ventilator on the top, but all of our experiments proved fruitless. The upright section of the pipe gets hot, and we cannot understand why the air in it does not rise. This is a very puzzling question to us, though it may be very easy to some of the readers of *The Metal Worker*, and we would be pleased to get their solutions of the problem.

Note.—This seems to be a perplexing problem, yet it is possible that some of our readers have met and solved it, and their method will be interesting to many. With a furnace having an area of 721 inches of hot air outlet it is fair to suppose that the cold air duct is of ample size, having an area of at least two-thirds of this amount, or about 480 inches, which will more than fill the pipes left open even before it expands. A cold air duct supplied as in this case would be less influenced by winds than is the general experience, so that the pressure of air on the furnace would tend to force hot air out of

the exhaust pipe, as there is a fire place in the room in question through which a large amount of air could escape. It is possible for the air to pass down the short heating pipe in this room to the furnace and then air would readily flow in at the exhaust register. The pressure from the natural winds would be toward the heating register, and short circuiting as above described has been reported. By running the pipe up so high in the furnace it is easier for the hot air to enter it, though under ordinary conditions heating the pipe would aid in lifting the air. The exhaust pipe should not run along the cellar ceiling where it might become warm and hinder a down current of air. It should preferably have a down pitch from the register to the furnace, or drop down at once and run along the floor and enter the furnace low down. Often an exhaust pipe works better when the register is placed near or alongside of the heating register, when both registers may be located at some distance from the furnace if need be. We would suggest that the exhaust pipe inside of the furnace be removed and nothing left but the elbow. We shall be glad to have this case fully discussed.

A Roof Problem.

From C. E. S., Wheeling, W. Va.—I would like to see some discussion on the subject of roofing in reference to the possible leaks in double lock across seams. A contemplated improvement in a building here requires a new tin roof 40 x 120 feet. The owner complains about the many bills which he has paid in the past for repairing the cross seams on the present roof, which have been pulled apart parallel with the pitch of the roof. The roof is a standing seam roof, and he wants the difficulty above mentioned obviated in the new roof and objects to double locking on account of capillary attraction. He does not fear the leakage from such a seam so much as the breaking of the bend in the seams after it is once set, which will let in water to destroy the roof, which has not a very great pitch. I have suggested that the roof be constructed in sections of 20 feet each with one general pitch, each section having a vertical rise of 5 inches above the other, forming a series of steps. These offsets would compensate for the contractions. This suggestion has been ridiculed as impractical and I would like to have the subject discussed.

Will It Work?

From G. F. S., Washington, D. C.—In answer to the query of "F. L. M.," Rosetville, N. J., in *The Metal Worker* of February 16, I would advise him to take a branch out of the top of the pipe from the water back to the boiler and put a stop cock between the branch and the boiler. Then run the branch up and over to the radiator, dropping down and connecting with it. An air valve must be placed at the highest point on the piping and a stop cock on the branch where it connects with the water back pipe. The return from the radiator should be run conveniently and connected with the pipe from the bottom of the boiler. By closing the stop

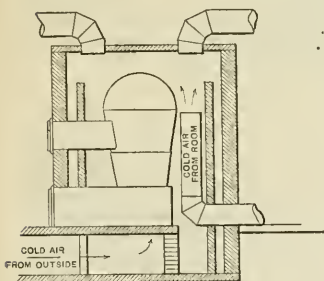


Fig. 2.—Sectional View.

ning a pipe from it to the furnace chamber. We did so, as shown in Fig. 1, which is a plan showing the sitting room and exhaust pipe. The pipe works the opposite of what we expected, however, and sends warm air

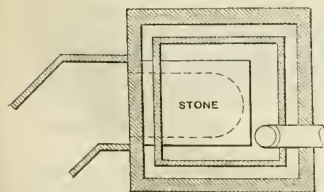


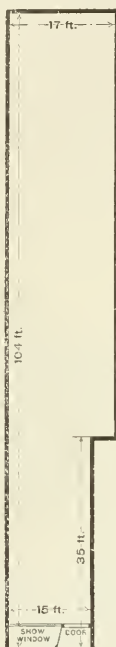
Fig. 3.—Plan View of Furnace.

into the room. The furnace has ten hot air pipes: two 12 inch, two 10-inch, three 9-inch and three 8-inch, all taken from the top, as shown in Fig. 2, which is a sectional view. The furnace is

cock to the boiler and opening the other the circulation must go through the radiator. By reversing the manipulation of the cocks the boiler will be heated without heating the radiator. By opening both cocks a little both will be heated.

Arrangement of Hardware Store.

From GEORGE ROME & Co., *Carnegie, Pa.*—We send herewith a floor plan of a building we expect to fit up early in the summer and would be pleased to receive suggestions as to the best way of fitting this up for our own use. On account of the store being narrow we think of not using any counters, but using instead a wide counter shelf with a recess in the shelf for the scales. Our stock will consist of hardware, tinware, house-furnishing goods, paints, stoves



Arrangement of Hardware Store.

and furnaces. We would also like to receive cuts and prices from manufacturers of screw and bolt cases.

The Quality of Tin Roofs.

From EXPERIENCE, *New York.*—Some two weeks since there appeared in your journal a letter from a Southern correspondent asking for information as to the lasting qualities of gravel roofs. He also went on to say that "where tin was formerly used in his section gravel roofs are now being specified;" and further makes an assertion that is somewhat remarkable, that "he can put on a good roof at 4 cents per square foot and make money out of it." Your correspondent's statement as to his using a quality of tin costing only 4 cents per square foot unfortunately exposes "the milk in the cocoanut," as any of your readers acquainted with the tin roof business would know (if they were aware of the location from which your correspondent writes) that it is an

utter impossibility to buy even cheap prime plates, pay freight to destination and put them on the roof at the figure given by your correspondent. Indeed, to be able to make any profit at all (the quality of goods to which he refers has to be judged of course by the price which he states—4 cents per square foot, laid) he has to buy a plate either in Baltimore, New York City or Philadelphia that costs about \$6 50 per box. Of course, it is needless to state that a plate at this price is a "waster" of the very poorest quality, and possibly containing holes over which paint itself would have no protective properties. Is it to be wondered at that with the use of such inferior and utterly disreputable material, gravel roofs—or any other kind of covering—would be substituted? Why is it that in the cities of Chicago, St. Louis and others, there are hardly any tin roofs? Your correspondent answers this question very satisfactorily himself when he makes a statement involving such a clear insight into just what class of material Southern cities have been afflicted with for such a long time. The citizens of St. Louis and Chicago have come to the same conclusion, and very wisely. It is simply the instinct of self preservation to obtain a covering that will at least shield them from the elements a reasonable length of time.

Being interested in the roofing business ourselves, we know that the use of inferior tin rests wholly with the property owner, the jobber and the consumer. There never has been a time when so many light weight and acid made plates have been used for roofing purposes as in the past four years. Competition has never been so severe and property owners never so reckless of their own interest as at present. The only cause we can assign for this is that they expect \$1 worth of work and material for 60 cents. And besides, the price of roofing plates has been so materially reduced during the past few years by the introduction of what is known as the "acid flux process" that this class of material can be bought at a much less rate than any of the plates made by the palm oil process. If property owners could be taught to understand the difference in results between plates made by the acid process and plates made by the palm oil process they would be somewhat startled. Yet we do not think that out of every 100 boxes of tin plate sold to-day there are above three or four made by the palm oil process.

Years ago, competition among tin plate manufacturers centered itself on the quantity of coating that could be successfully placed on one sheet, which, by the way, was then put on by the palm oil process exclusively, acid being comparatively little known. Those who could show the heaviest coating were awarded the laurel. To-day everything is different. It does not so much depend on the amount of coating given a plate to determine its selling properties as on the price at which it can be profitably sold. We cannot blame property owners for using anything in preference to cheap tin—even gravel roofs. It is simply a matter of self defense. We do blame jobbers and roofers, however, for the present condition of affairs, and firmly believe that if the better class of roofers would only take the trouble to educate property owners to understand that but a fraction of a cent per square foot exists between a thoroughly reliable palm oil made plate and a plate made by the acid flux, they would appreciate the hint and act accordingly. It would

have the tendency to at least lessen the fierce competition, while property owners would be willing to pay a little more for their tin when the result of its use could be clearly shown.

Of course, the fact that there are a great number of firms doing a large business who are placed in a false light by the present condition of affairs is fully appreciated, and although it may not at present be realized, there will be many of them in a few years like O hello, whose occupation will be gone. Again, do they stop to realize that this incessant warfare of prices simply means carrying on business for the fun of it? Sacrificing quality to price is suicidal, and generally ends in oblivion. We are sure *The Metal Worker* will bear us out in the assertion that not one firm can be pointed out—whether jobbers or roofers—who ever made a success in dealing exclusively in cheap and disreputable goods. It is in direct opposition to the law of natural worth. Yet we know for a fact that some of the old style plates nowadays which are supposed to be made by the palm oil process are made by acid flux in order to cheapen the cost of production and compete with the more reputable brands of palm oil manufactured plates, regardless of the welfare of the house, the roofer or the property owner.

In conclusion, we can only say that your correspondent has given the key to the whole situation, that until property owners are taught to understand that cheapness is not the first requirement (in roofing plates, at least), nothing but constant expense and new roofs will be the order of the day. And we will venture the prophecy that if acid plates are put on as recklessly in the next four years as they have been in the past, the cheap tin plate will be utterly abolished and a substitute introduced more favorably adapted to atmospheric action and the length of the buyer's purse.

Lining Slate Tank.

From E. S. W., *East Wallingford, Vt.*—One of my customers here has a slate tank, 26 inches square by 3 feet deep, which he uses for holding hot water. The expansion and contraction caused by the hot water becoming cool opens the joints, causing the tank to leak; consequently the owner wants the tank lined. Now, I would like to hear from *The Metal Worker* readers as to what material is best for the purpose. I want to use something that will wear well and stand the expansion and contraction without leaking. Would copper be better than zinc or galvanized iron?

Note.—It is probable that tinned copper will be the best, both for durability and cleanliness. The tank lining can be made outside of the tank and then put in. It should have a wire at the top, or a wood frame could be used, with the edge of the copper turned over and fastened to it with nails. We would be glad to have other suggestions from our readers.

Rimmed Covers for Coffee Pots.

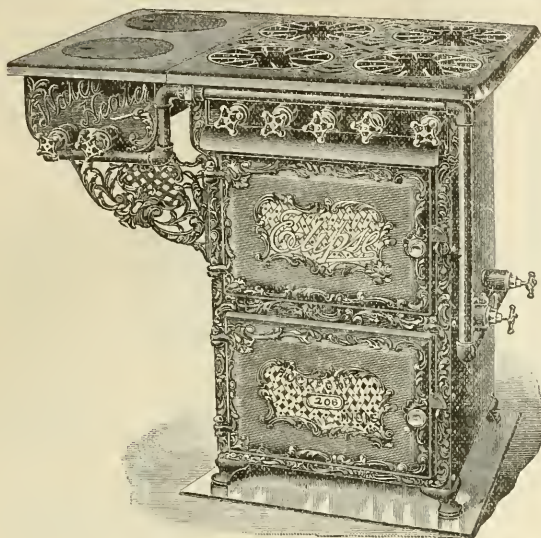
From J. G. F. W., *Indiana.*—I have lately found that we can buy rimmed covers for almost the same price as plain ones, and by changing the patterns of coffee pots and boilers we reduce the cost by cutting off about one-third of the work. If our brother tinners would do likewise they would be better able to compete with factory ware.

THE RETAIL STORE.

The Eclipse Gas Stove.

A new gas stove is herewith illustrated which has been brought out by the Eclipse Gas Stove Company, successor to the Van Wle Gas Stove Works of Rockford, Ill. This style of

the pieces can be easily taken out when repairing is necessary. The advantage of having no "rusting in" of screws is appreciated by those who have to repair gas stoves. The company's Standard mixer will be used on the top burners and also on ovens. The design of



The Eclipse Gas Stove.

stove is made in two sizes, the larger with ovens 18 x 18 x 11 inches and top 23 x 27 inches, while the smaller has ovens 14½ x 14 x 10 inches and top 23 x 23 inches. The end shelf on each is 6 x 23 inches. They have a smooth open top, and the grates come flush with the top. Each size is made with three or four cooking holes, and a very neat water heater can be attached to any of the four different stoves, thus making eight styles. An important feature is that any three-burner stove can be

the stove has been copyrighted, it being entirely original, and the cut here presented is an excellent reproduction.

Covert Snaps.

Covert Mfg. Company, West Troy, N. Y., are introducing two new snaps, the Trojan and Jockey, as herewith shown. The Trojan snap is of the bolt variety, and is so constructed, it is stated, as to possess features of

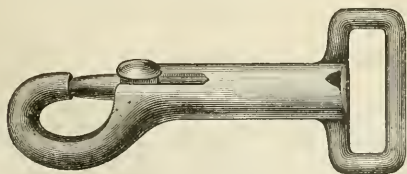


Fig. 1.—The Trojan Snap.

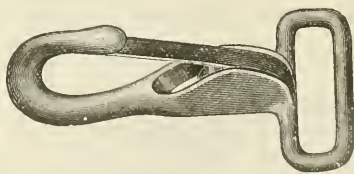


Fig. 2.—The Jockey Snap.

changed to a four-burner after the stove is set up and connected. This change can be made without disconnecting or in any way disturbing the stove, so that consumers can increase the capacity of their stoves, and are not obliged to sell a good stove at a sacrifice when they desire a larger one. Linings will be put in with brass screws, so that

great merit. These are made with a loop, as shown, also with a round eye. The Jockey snap has a steel spring, and is particularly noticeable for its neatness of design and utility. This snap is also made with a round eye. Both snaps are made with ½ inch to 2-inch loops, and with ¼ inch to ½ inch round eyes.

MEMORANDA.

THE FIRM of H. A. Tanner & Son, Aurora, Ill., have been succeeded by Henry R. Tanner.

J. R. RICH & SON, stoves and tinware, were recently burned out at Asheville, N. C. They were well insured and will continue in business.

THOMAS POLK of Jackson, Tenn., is reported as having sold his stoves, tinware and hardware business to Lawson, White & Co.

THE SHUK REFRIGERATOR COMPANY, 273 Wabash avenue, Chicago, have opened branch offices at 36 Warren street, New York, and 905 Market street, Philadelphia. They have brought out some new features in refrigerators this season, which they believe will be appreciated by the trade.

JAMES A. NICHOLSON & Co., 116 South Calvert street, Baltimore, Md., as agent for H. S. Brewington, is offering two malleable iron household articles, one of which combines a stove lifter, ice pick, tack hammer and drawer, pan, kettle and pot lifter, screw driver and can opener. This article is furnished coppered and tinned, and measures 9½ inches in length. The other device measures 11 inches in length and combines ice pick, ice shaver and crusher, beef steak chopper and cutter, and is furnished coppered.

W. L. GOODRICH has severed his connection with the Chicago Stamping Company and now represents Sidney Shepard & Co. of Buffalo in Southern Michigan and Northern Indiana. Mr. Goodrich is a veteran in the Tinware trade. Prior to his engagement by the Chicago Stamping Company he spent a number of years with C. Sidney Shepard & Co. of Chicago. Few men are better known throughout the Western Hardware trade.

MATTISON, STEWART & Co. have taken store room and office accommodations at 69 Beekman street, New York, for the purpose of jobbing Hardware, House Furnishing Goods, Culinary Utensils and such desirable novelties or specialties as are being brought by manufacturers to their notice. They are business men of experience, fully ac-

quainted with the trade, and have found it advisable to enlarge their business. They are traveling New England territory and portions of Pennsylvania, Ohio and Indiana, besides the metropolitan district in and about New York. They will include Garden Sets and Hose among other goods handled by them for some time.

STEAM AND HOT WATER.

Combination Heating.—IV.

BY J. W. HUGHES.

When a neat job was wished for and wall coils were used, they were screened by specially made base screens, as shown in Fig. 13. When set against the wall it was customary to first line the wall with a thickness of building paper, A. On this was placed a lining of sheet tin, B, the coils C setting close

to the wall. These coils give excellent results in all kinds of hot water heating, and are particularly adapted to apartments where space and appearance are not great objects. They are less liable to become air bound than the one illustrated in Fig. 16, which must at all times be set perfectly level.

Fig. 19 shows plan of a set of coils fitted up in the writer's house as an

experiment. Then by main F' up and through coil G; from thence through riser H into header coil I and from top of one of the headers is taken the expansion tank. From one end of header coil the return J conveys the water into coil K, which winds around the partition, forming a coil to heat a room on each side, and from this through Z and coil M it returns to furnace through N, the arrangement of air cocks, feed, &c.,

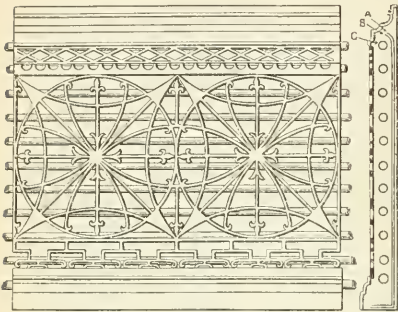


Fig. 13.—Base Screen for Wall Coil.

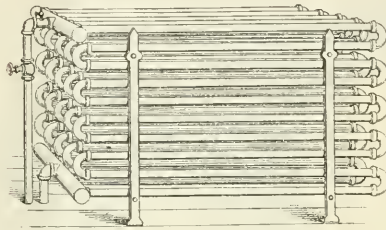


Fig. 14.—Box Coil.

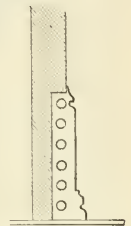


Fig. 15.—Coil Set in Partition.

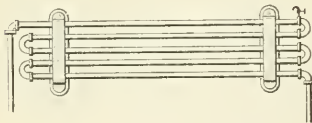


Fig. 16.—Ordinary Wall Coil.

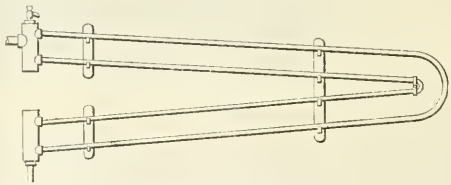


Fig. 18.—Long Circulation Coil.

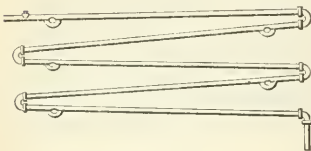


Fig. 17.—Long Circulation Coil.

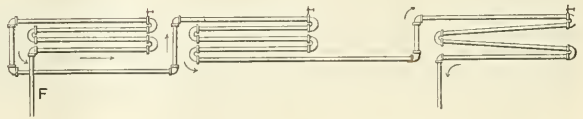


Fig. 19.—Experimental Set of Coils.

COMBINATION HEATING.

to but not touching the tin, a sufficient space being left for circulation of air around the pipes. Fig. 14 shows box coil, which could be fitted with the usual screen and marble top. In very small apartments, where every inch of room was of importance, the base coils or circulations were frequently let into the partition, as in Fig. 15, the tin and paper being fitted behind the coil, and the screen taking the place of the usual baseboard. Fig. 16 shows the wall coil or circulation commonly used, the return pipe being at either end, and each coil being fitted with air cock and spout for convenience of drawing off water. Figs. 17 and 18 show long cir-

culation coils set with a pitch or fall. These coils give excellent results in all kinds of hot water heating, and are particularly adapted to apartments where space and appearance are not great objects. They are less liable to become air bound than the one illustrated in Fig. 16, which must at all times be set perfectly level. Fig. 19 shows plan of a set of coils fitted up in the writer's house as an

experiment. Then by main F' up and through coil G; from thence through riser H into header coil I and from top of one of the headers is taken the expansion tank. From one end of header coil the return J conveys the water into coil K, which winds around the partition, forming a coil to heat a room on each side, and from this through Z and coil M it returns to furnace through N, the arrangement of air cocks, feed, &c.,

being substantially as shown in the other plans. An arrangement of the kind shown in Fig. 20 calls for a powerful heater, and the circulation will, of necessity, be rapid. The objection to this plan is that coils M and K, &c., will not be as warm as F and G, &c., but by arranging to get the hotter coils in the colder or more exposed rooms this objection is not serious. From what has been written the reader will be enabled to grasp the general principles and adapt them to his needs, and this is all that can be expected in any article on such a subject. It will be noticed that most of my allusions have been made to com-

bination hot water heating in the past tense. This is because it is really a form of heating seldom used now in the city where this article is written (Montreal, Canada). The straight hot

lower portion of the feed chamber was cut off, and in its place fitted a close spiral coil of $\frac{3}{4}$ pipe. From this main and return pipes were run to an upper story, where they supplied sufficient heat to successfully warm a lean-to conservatory 15 feet long and 10 feet wide by 9 feet at the highest point, giving excellent satisfaction to the amateur botanist who owned it. A good idea of this plant can be obtained from Fig. 21,

were taken off, as shown, one going to supply hot water reservoir I, the other a radiator, H, situated on floor above. By manipulating the valve on radiator when hot water is wanted in great quantity in I, it can be obtained; at other times each gets its equal share. Sometimes trouble was experienced in getting the circulation from the heater coil in the furnace to work the right way—that is, it would “back up,” and

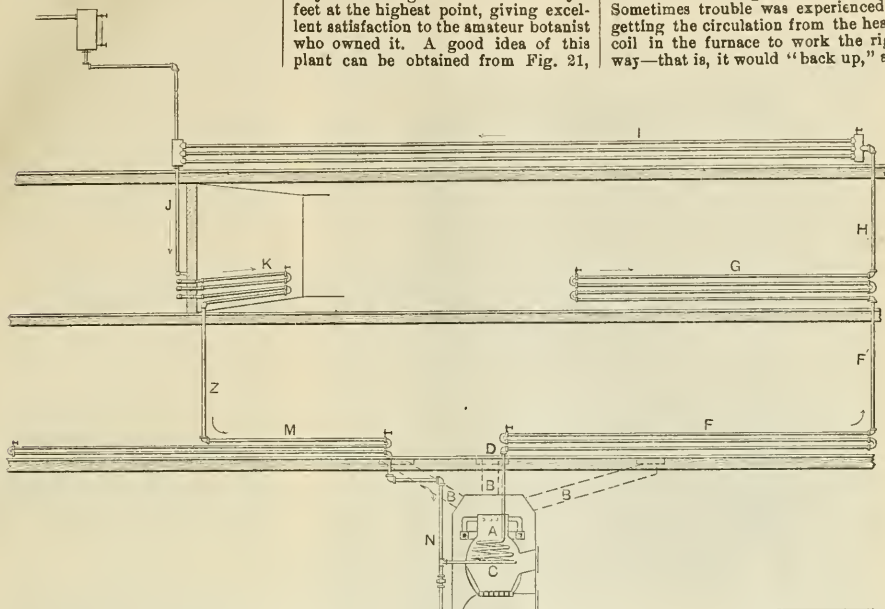


Fig. 20.—Pipe Arrangement for Powerful Heater.

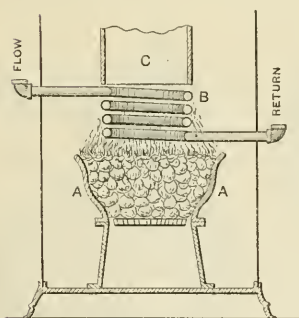


Fig. 21.—Coil Forming Feed Chamber.

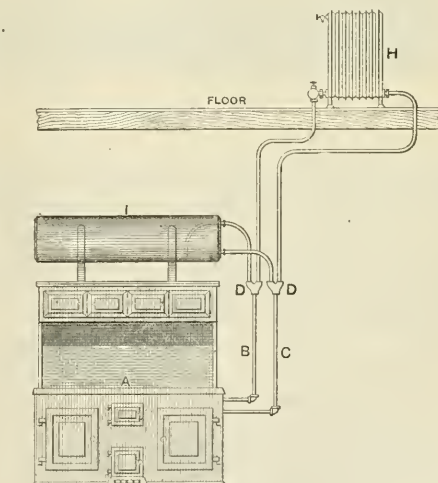


Fig. 22.—Heating Radiator from Water Back.

COMBINATION HEATING.

water apparatus has almost driven every other form of heating for domestic purposes from the field, but there is a good deal to be said in favor of the combination system, and it is undoubtedly worthy of the serious consideration of hot air furnacemen.

The principle has been applied in heating a small conservatory from an ordinary self-feeder hall stove. The

A being fire pot; B coil replacing portion of feeder; C cut-off to receive coil.

Single coils and radiators to warm a room heated from the ordinary water back of a stove or range are common enough. One such recently fitted is shown in Fig. 22—A, range; B, 1-inch flow pipe from the heater; C, return; D, D, two 1 x $\frac{3}{4}$ inch Ys; $\frac{3}{4}$ inch branches fitted with bends (not elbows)

the flow would be through the return pipe. A number of plans were tried to overcome this, the best being to make a dip or inverted siphon in the return pipe before it entered the furnace.

In filling the apparatus it is best to have all the air cocks open and fill very slowly. Cocks were specially made for this purpose, having only a $\frac{1}{4}$ -inch hole in the plug. As soon as

water began to run from air cocks they were closed until the apparatus was full, then reopened and a gallon or two of water drawn from each cock, or until such time as the water issuing showed no signs of containing air. When a coil refused to circulate, it was found an excellent plan to loosen the straps by which it was secured to wall, open-

Problem for an Engineer.

From P. F., Washington, N. J.—There is a small church here containing about 46,550 cubic feet of space and a brick parsonage containing 16,663 cubic feet of space, located about 50 feet apart. The ground on which the church stands is about 5 feet higher

face of the ground by a steam fitter in Springfield, Mass. A cast iron soil pipe was laid in perfect alignment between one residence and another and the joints carefully calked. This pipe was wrapped with asbestos paper to prevent the next wrapping of hair felt from overheating. The hair felt was then covered with oil paper and the trench filled in with cement around the pipe. In running the steam pipe it was suspended so that it did not come in contact with the sides of the cast iron pipe. A less expensive plan would be to use a wooden box around the pipe after it had been well wrapped. The size of the pipe will depend entirely on the amount of radiation that is to be placed in the church, and without more information than is given with the sketch it will be impossible to state what size would be best. The information that would be gained from consultation with a competent heating and ventilating engineer on this subject would be worth far more than the fee that would be charged. It would be necessary, however, to submit plans of both buildings that are to be heated to secure the best advice. Rules for computing radiation that have been tested are given in the "Essays on House Heating" taken from *The Metal Worker*.

A Pipe Fitting Question.

From W. H. P., Washington, D. C.—From the pipe fitting question in *The Metal Worker* of February 9 I would infer that several pipes are to be taken from the main pipe, if the sketch is correct. The explanation of the sketch would imply that only one outlet is to be used, but whichever is the correct



The Ornate Radiator.

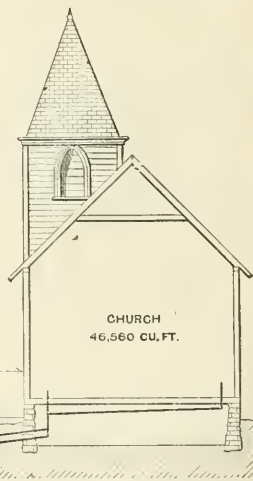
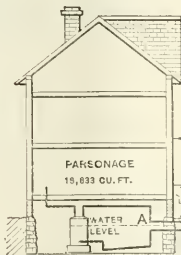
ing the air cock and letting water run into a large vessel, at the same time tilting the coil first up at one end, then at the other, until any air that had become jammed in the coil had escaped, which it would do in puffs. Of course, with coils having a pitch this kind of trouble did not occur. It is astonishing how little air will completely stop circulation. Fire slowly at first after coils are once started and there will be no more trouble.

The Ornate Radiator.

The illustration presented herewith shows a new style of the Ornate radiator just put on the market by the United States Radiator Company, Saltsburg, Pa. The radiator shown represents the style in which the 32 inch high is made. The central connection of the loops or columns has proven of advantage in hot water systems by securing a circulation of water when the radiator is not full. A feature of the ornamentation is the introduction of their trade-mark, bearing the word "Ornate" in the design.

WIRETON HEATING COMPANY have been incorporated at Chicago, with a capital stock of \$50,000, for the purpose of manufacturing ventilating apparatus. The incorporators are Charles Loughbridge, David Williams, Allen L. Fowler.

than the ground on which the parsonage stands. I want to heat both the parsonage and the church with a steam heating plant, placing the boiler in the cellar of the parsonage. I should like to receive some information as to the best manner of doing the piping between the two buildings. Would it be best to put the pipe in a trench, and



Problem for an Engineer.

what size should the pipe be? I inclose a rough sketch of what I propose to do and would be pleased to have the subject criticised.

Note.—A short time since we described the method of protecting a pipe that was run about 3 feet below the sur-

face of the ground by a steam fitter in Springfield, Mass. A cast iron soil pipe was laid in perfect alignment between one residence and another and the joints carefully calked. This pipe was wrapped with asbestos paper to prevent the next wrapping of hair felt from overheating. The hair felt was then covered with oil paper and the trench filled in with cement around the pipe. In running the steam pipe it was suspended so that it did not come in contact with the sides of the cast iron pipe. A less expensive plan would be to use a wooden box around the pipe after it had been well wrapped. The size of the pipe will depend entirely on the amount of radiation that is to be placed in the church, and without more information than is given with the sketch it will be impossible to state what size would be best. The information that would be gained from consultation with a competent heating and ventilating engineer on this subject would be worth far more than the fee that would be charged. It would be necessary, however, to submit plans of both buildings that are to be heated to secure the best advice. Rules for computing radiation that have been tested are given in the "Essays on House Heating" taken from *The Metal Worker*.

The Nichols Tap and Reamer Wrench.

The cuts shown herewith represent a tap and reamer wrench, put on the market by the J. M. Carpenter Tap & Die Company, Pawtucket, R. I. In Fig. 2 the knurled sleeve is broken away, showing a right hand thread on the outside of the neck of the stock and a left hand thread on the handle. It is explained that the two threads are embraced by the corresponding interior threads of the sleeve; that a right hand turn of the sleeve closes the jaws while a left hand turn opens them, and that the handle moves in and out without any rotary motion, avoiding all tendency to uncrew while at work. The point is made that the large diameters on which the threads are enabled

<i>Magnesia (Sectional).</i>	
Magnesia.....	92.2
Fibrous asbestos.....	7.8
<i>Magnesia (Plastic).</i>	
Magnesium carbonate.....	93
Fibrous asbestos.....	7
<i>Asbestos Cement Felt.</i>	
(Probably) Powdered limestone.....	64.5
Plaster of paris.....	3.5
Asbestos.....	32
<i>Asbestos Sponge Cement Felt.</i>	
(Probably) Powdered limestone.....	59
Plaster of paris.....	10
Asbestos.....	31
<i>Fossil Meal.</i>	
Insoluble silicate.....	80
Carbonaceous matter, hair, paper, sawdust, &c.....	12
Soluble mineral matter.....	8
On all condensation tests the gauge pressure was held at 25 pounds. The	

the boiler was allowed to freeze. The water got out of the boiler, and the sexton of the church, not knowing of the condition of the boiler, started a fire. Then he went away to attend to some other duties, and when he returned the boiler was rendered useless.

THE J. H. McLAIN COMPANY of Canton, Ohio, and 58 Dearborn street, Chicago, have issued a very handsome and artistic calendar, which runs from this month until March, 1896. It is a reproduction of a water color drawing by the well known artist Archie Gunn, and was made especially for the J. H. McLain Company. Mr. Gunn calls it "An American Girl Up to Date." It is a highly ornamental souvenir.

W. W. WARD will now talk the Royal line of heating apparatus, having



Fig. 1.—The Nichols Tap and Reamer Wrench.

to be cut by this design allow the use of threads coarse enough to produce quick movements of the jaw, while the angle of the threads is so small that sufficient power is obtained by the hand alone so get a strong enough grip to prevent all loosening while at work. It is stated that no pin, wire, or other implement is needed to tighten its jaws upon the tap or reamer, the hand being sufficient to tighten the jaws; that the weakest point in similar wrenches is in this one greatly strengthened by the knurled sleeve, and that the wrench is of the best workmanship throughout,

water was drawn off every 15 minutes and was measured in cubic centimeters. Each test was continued for four hours. The mean results are tabulated below.

<i>Condensation Tests.</i>	
	Ccm.
Name of covering.	Condensed per hour.
Magnesia (plastic).....	334
Magnesia (sectional).....	335.3
Asbestos fire felt.....	347.5
Asbestos sponge, molded.....	371.3
Fossil meal.....	376.2
Plaster of paris and sawdust.....	428
Asbestos fire felt cement.....	565.7
Asbestos sponge cement.....	604
Bare pipe.....	1055

been engaged by Manager Mackay of the New York house of Hart & Crouse, Utica, N. Y.

THE MODEL HEATING COMPANY, Philadelphia, are sending a postal card to the trade requesting them to "Wait a moment" before buying steam and hot water boilers until their 1895 catalogue is issued.

THE second of the series of lectures on steam and hot water heating presented under the auspices of the Chicago Steam Fitters' Protective Association will be given at Jefferson Hall, 70



Fig. 2.—Showing Working Parts of the Wrench.

having hardened steel jaws and all parts interchangeable. The tool is made in five sizes, taking taps from 0 to 1½ inches in diameter.

Tests of Non-Conducting Pipe Coverings.

A series of tests have been made at the St. Louis Water Works by John A. Laird, to select the most suitable covering for pipes, boiler shells, &c., in the new pumping station at the Chain of Rocks. The report appears in the "Proceedings" of the Association of Engineering Societies. There were purchased asbestos sponge molded sectional covering, asbestos fire felt sectional covering and magnesia sectional covering, all for 1-inch pipe. Also, asbestos sponge cement felting, asbestos cement felting, plastic magnesia and fossil meal. Tests were also made on plaster of paris and sawdust, molded into covering for 1-inch pipe.

The different coverings were subjected to chemical examination by Mr. Wixford, chemist of the water works, with the following approximate results:

<i>Asbestos Sponge, Molded.</i>	
Plaster of paris.....	95.8
Fibrous asbestos.....	4.2
<i>Asbestos Fire Felt.</i>	
Asbestos.....	82
Carbonaceous matter not determined.....	18

On the question of durability Mr. Laird states that the magnesia sectional covering which has been on pipe at Bisell's Point for four years shows no signs of deterioration; also that the asbestos sponge molded covering which has been on pipes at Harlem Creek for less than two years is becoming soft, and the plaster of paris seems to be reduced back to the original powder, with nothing but the fibrous asbestos to hold it together. Another question is that of steam pressure. The experiments were made at the High Service Station, No. 2, and it was found convenient to have all tests made at 25 pounds gauge pressure. As the working pressure at Chain of Rocks will be at least 125 pounds, the relative efficiency of insulation will be slightly changed, but in Mr. Laird's opinion, not enough to change the conclusions here arrived at.

HEATING NOTES.

WALDRON MOORE, formerly connected with Eston, Cole & Burnham Company, and now assistant manager of the New York branch of the Crane Company of Chicago, has recently paid the New England trade a visit.

THE BOILER used in heating the Baptist Church at Essex, Conn., has been ruined in a peculiar manner. During the recent cold snap the main pipe of

Adams street, Monday evening, March 18. The subjects treated on will be combination heating, steam and hot water, steam heating as applied to large plants.

HARRIE D. CRANE of Cincinnati, Ohio, president of the National Association of Steam and Hot Water Fitters of the United States, attended the plumbers' convention at Columbus, Ohio, last week, and P. G. Munroe of New York, clerk of the association, attended the plumbers' convention, at Troy this week.

H. C. HODGES, president of the Detroit Lubricator Company, was in New York last week and left some samples of their new steam valves with W. A. Russell, their New York representative at 89 Centre street. The new valves are attractive in symmetry, having the circular appearance of the globe valve. The quick opening steam valve is ground flat and polished, with a monogram on three sides to distinguish it from the regular steam valve.

R. D. JACKSON, 89 Centre street, New York, is showing new cuts of the Electric steam and hot water boiler, which have had some slight changes made in the construction.

CHAS. F. HAUS is assisted by J. W. Fryer in looking after the interests of

the Richmond Stove Company, New York. Mr. Hausa has an office in the showroom of Albert Cryer & Co., at 89 Centre street, where the Richmond sectional and the Victor steam and hot water heaters are exhibited.

THE Association of House Heating Boiler Manufacturers had a meeting in New York on Thursday.

W. H. PFÄHLER of the Abram Cox Stove Company, Philadelphia, made a visit to the heating trade on Centre street, New York, last week.

W. A. RUSSELL, 89 Centre street, New York, will represent the Model Heating Company, Philadelphia, in a large scope of territory. Mr. Russell says the Novelty line of steam and hot water boilers represents eight styles and 101 sizes with capacities for carrying from 100 to 3700 square feet of radiation.

A NUMBER of the delegates to the convention of the State Plumbers' Association at Columbus, Ohio, last week formed an organization to be an auxiliary to the National Association of Master Steam and Hot Water Fitters of the United States. President H. D. Crane of Cincinnati was present and explained the objects of the association. The following officers were chosen: President, Charles Klie of Columbus; vice-president, W. D. Theobald, Canton; secretary, Frank Stratton, Columbus; treasurer, G. L. Saunners, Columbus; Executive Committee, John McVey, Lima; Herman Apple, Sandusky; Frank Love, Cincinnati; J. L. Walker, Hamilton; G. W. Morgan, Cleveland; and J. V. Kraus, Akron. The newly formed association adjourned to meet next February in Cincinnati.

FRED. P. SMITH, consulting heating and ventilating engineer, Mohawk Building, 160 Fifth avenue, New York, has made the plans and is supervising the heating and ventilation of the new Proctor Theater on Fifty-eighth street, New York. Mr. Smith has the plans for similar work for several other large buildings and schools on the boards in his drafting room.

THE FIRM of Englehart & Krebs, 82 West Washington street, Chicago, have been dissolved, and a new company formed in their place, to be known as the Englehart & Stott Company. The officers of the new company are as follows: F. J. Englehart, president; D. M. Stott, formerly with the American Boiler Company, vice-president and treasurer; E. A. Smith, secretary. The company will retain their present location and do a general business in warm air, steam and hot water heating.

THE CARTON FURNACE COMPANY, Utica, N. Y., are about to issue a new catalogue showing a line of steam and hot water boilers. These boilers have been under test in residences before placing them on the market, and the catalogue is an evidence that the test has been satisfactory.

BEING desirous of increasing the sale of their product in Philadelphia and vicinity, the American Radiator Company have secured a commodious office and sample room at 506 Arch street, Philadelphia. The quarters are now being fitted up, and will be ready for occupancy by April 1. This branch will be under the supervision of the New York branch of the American Radiator Company, and the local manager will be Frank A. Braslow.

THE CALORIC CLUB, composed of manufacturers of house heating appa-

ratus, had one of their enjoyable dinners on Wednesday evening at the Hotel Netherlands, New York.

New York State Steam Fitters.

Many of the delegates to the convention of plumbers at Troy, N. Y., remained to attend the meeting on Thursday to consider the proposition to form a State association of the Master Steam and Hot Water Fitters' Association. The meeting was held in the rooms 34 and 35, Hall Building. Representatives to the number of about 50 from all over the State attended. Among those in attendance were State Vice President F. A. Wells of New York, Past President Enoch Rutzler of New York, Secretary P. G. Monroe of New York and James Curran and J. L. Wells, both of New York, of the National Executive Committee.

It was decided to form a State association. The organization was effected by electing the following: President, William M. Tobin; vice-president, John Creelman of Rochester; secretary, William F. Quinn of Troy; treasurer, P. C. Dougherty of Poughkeepsie; sergeant-at-arms, Charles Willis; Executive Committee, H. Patterson of Albany, James Conway of Jamestown, and T. L. Cusick of Kingston. The association will apply to the national association for admittance into that organization.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

BARRY & FELLOWS will erect at Forty-seventh street and Woodlawn avenue, Chicago, two \$15,000 residences which will be heated by hot water.

E. W. PECK & Co., Derby, Conn., have a gang of plumbers and roofers at Seymour working on Dr. Benedict's new residence.

A COMMITTEE consisting of W. F. Nichols, H. E. McElwain and J. D. Hardy has been appointed by the Second Congregational Church Society of Holyoke, Mass., to look up a system of ventilation for the church and report at the next annual meeting.

JOHN M. PAGE & Co., Naugatuck, Conn., have received the contracts for heating and plumbing the new residences of L. M. Tolles, George Craig, S. Gladding, Jr., and Geo. Merrill on Beecher Heights. The Victor hot water heater will be used.

SEALED PROPOSALS will be received by Chas. H. Jones, Toledo, Ohio, Auditor for Lucas County, up to 12 o'clock noon March 12, 1895, for the constructing and supplying of a steam heating, ventilation, power and hydraulic plant for the new Lucas County Court House. General plans and specifications prepared by David L. Stine, architect, are on file in the office of the Auditor of Lucas County, Ohio, and are to be considered a part of the invitation for bids.

THE LORD & BURNHAM COMPANY, Mohawk Building, 160 Fifth avenue, New York, are erecting greenhouses and installing the hot water heating plants, using their boilers, for Dr. Lucien Warner, Irvington, N. Y., R. B. Crane, Westfield, Mass., and H. A. Holcomb, New Bedford, Mass. They also have

two notable contracts, one for a large conservatory for George Vanderbilt, at Biltmore, N. C., in which large horizontal tubular boilers will be used, the other for the New York Institute for the Instruction of the Deaf and Dumb, where floriculture and kitchen gardening will be taught the mutes. In this plant a National feed water heater is used for heating the water used in the radiation, steam for the heater being carried several hundred feet from the battery of boilers in use in the institution.

L. E. TURNER, Baldwinsville, Mass., is putting a Winchester steam heater in the residence of John Chisholm.

THOMAS J. O'MALLEY, 317 Wells street, Chicago, has the contract for the plumbing and drainage in the flat building of T. Sweeney, 1033 Sheffield avenue.

GEORGE FRANKLIN, 1843 West Ravenswood Park, Chicago, is to do the plumbing and drainage in the store building of W. J. Sanford, 1272 East Ravenswood Park.

WILLIAM BOWDEN, 238 Twenty fifth street, Chicago, is to do the plumbing and drainage in the store and flat building of Frank Goedecke, 5008 and 5010 Cottage Grove avenue.

SMITH & DORNEY, 1046 North Western avenue, Chicago, have the contract for the plumbing and drainage in the flat building of J. L. Hawser, Richmond, near Chicago avenue.

THE HEATING of the birthplace of liberty, as Independence Hall, Philadelphia, is generally known, is to be changed. A modern steam heating plant is to be installed by the Model Heating Company, Philadelphia, who will use two of their double Novelty boilers and the Italian flue radiators of the American Radiator Company, New York.

LAWRENCE GRADY, New Haven, Conn., has the contract for the plumbing in Julia L. Gallagher's two-family house.

JOHN A. DODD, Middletown, Conn., is to erect a residence which will have a plumbing system and a hot water heating plant.

JOHN E. DARROW, New London, Conn., is to erect a fine residence in which the Hopson & Chapin Mfg. Company will install a hot water heating plant.

J. J. SULLIVAN, New Haven, Conn., has the plumbing contract for the new house of John Spargo.

E. A. LETTNEY, West Haven, Conn., has the contract for the plumbing of the new house which C. E. Humphrey is building on Water street, also one on Main street which W. H. Lettney is building.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until March 23, for work including the plumbing in the basement and first story of the United States Post Office Building at Aurora, Ill. Drawings and specifications may be had from the Supervising Architect at Washington or from the Superintendent at Aurora, Ill.

THE UNION FURNACE COMPANY, 65 Dearborn avenue, Chicago, are to install a combination heating system in the flat building of S. F. Whitehouse, 3957 and 3959 Ellis avenue.

ROOFING AND CORNICE.

Conductor Heads.—III.

BY CORNICE WORKER.

Patterns for an Octagonal Leader Head.

In Fig. 21 are shown the elevation, plan and patterns of an octagonal leader head. A B C D represents the front elevation, corresponding to E G H I J F of the plan, C D O of the elevation corresponding to the plan of the octagon leader shown by L M N O P R S

obtained on the miter line N J draw lines parallel to J I cutting the miter line I O; likewise from the intersections on the miter line I O draw lines parallel to I H intersecting the miter line H P. As the front of the head D' in plan is the same as E' and C', it will only be necessary to obtain the pattern for the front D', which can be used for E' and C'. As the side of the head A' in plan is the same as the opposite side B', it will only be necessary to obtain the pattern for A', which can be used

For the pattern of the front proceed as follows: At right angles to H I of the plan draw the stretchout line T U, as shown, upon which place the stretchout of the profile B D of the elevation, as shown by the small figures. At right angles to T U, and through the small figures, draw lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn at right angles to H I from the intersections on the miter lines H P and O I. L'nes traced through these intersections, as

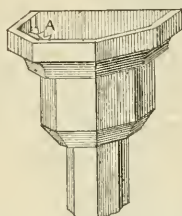


Fig. 22.—General View of Leader Head Indicated in Previous Figure.

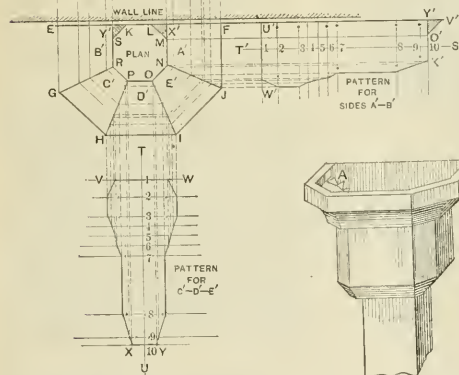


Fig. 21.—Elevation, Plan and Patterns for an Octagonal Leader Head.

Fig. 21.—General View of Leader Head Indicated in Previous Figure.

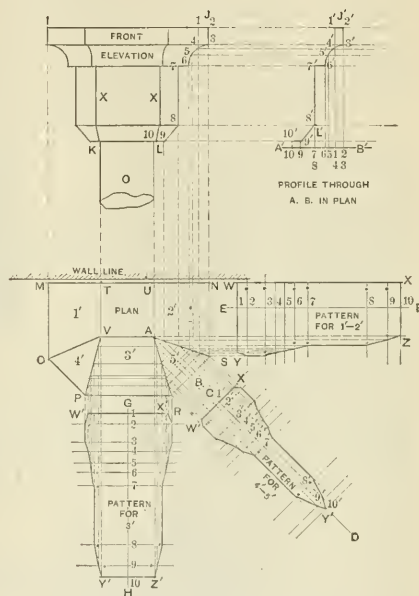


Fig. 23.—Elevation, Plan and Patterns for an Octagon Head Connecting with a Square Leader.

CONDUCTOR HEADS.—III.—PATTERNS FOR OCTAGONAL HEADS.

K. The dotted lines drawn from the plan to the elevation show their relation to each other. The two miter lines shown in elevation by X X are not necessary in the development of the pattern. After the plans of the leader and head have been properly drawn, as shown in Fig. 21, connect the corners of the leader to the corners of the head by miter lines, as indicated by N J, I O, P H and G R. For the several patterns proceed as follows: Divide the curved portion of the profile B D of the front elevation into an equal number of parts, as indicated by the small figures.

From these, and at right angles to A B of the elevation, draw lines through the plan view cutting the miter line N J, as shown. From the intersections

for B', reversing it in forming. For the pattern for the side of the head shown by A' in plan, draw a line at right angles to F J, as shown by T' S', upon which place the stretchout of the profile B D of the front elevation, as shown by the small figures on the line T' S'.

At right angles to T' S', and through the small figures, draw the usual measuring lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn at right angles to F J from the intersections on the miter line J N. Now trace a line through the intersections as shown from W' to X'. At right angles to F J extend the line E F of the plan indefinitely on to the pattern, as shown by the line U' Y'. Then will W' X' Y' U' be the pattern required for the sides A' and B' in plan.

shown by V X and W Y, will be the required pattern for the sides E', D' and C' of the plan.

In practice it would only be necessary to obtain the pattern for the side A' in plan, because the angles J I H G are alike, thus making the miter cuts on all of the patterns the same. The following will illustrate how the front pattern is obtained by using the side pattern. Let W' X' Y' U' represent the pattern for the side A', and let V W in the pattern of the front represent a straight line drawn on a sheet of metal. Now take the pattern of the side, and place W' U' upon the line V W on the metal and mark the miter cut V X. Now take the distance P O of the plan in the dividers, and place it as shown by X Y in the pattern. Now reverse

the pattern of the side and place the edge U' W' upon the line V W on the sheet of metal, making the corner X' in the pattern of the side meet the corner Y previously obtained with the dividers, and draw the miter cut W Y, which completes the pattern. For the pattern for the flat piece forming the back, shown by E F, Fig. 21, place a sheet of metal of the required size under the front elevation and prick through with a scribeawl as much as is indicated by A B D C. If the leader head was put together and the octagon pipe joined to it there would be found two openings, indicated in the plan by the shaded lines X' L M and K S Y'. To avoid this duplicate the triangle Y' S K and place it on the pattern for sides, as indicated by the shaded lines Y' V' O', which completes the entire set of patterns required for an octagonal leader head joining to an octagon leader. Fig. 22 shows a perspective view of the finished leader head, as seen from the front and top. A indicates the laps which are placed on the sides of the pattern and soldered water tight to the flat back.

Obtaining the patterns for a leader head forming the transition from a square leader to an octagon head:

In Fig. 23 are shown the elevation, plan and several patterns required to construct a leader head, forming a transition from a square leader to an octagon head. Let I J L K represent the front elevation, corresponding to M O P R S N of the plan, K L O of the elevation corresponding to the leader T U A V of the plan. The miter lines shown in the front elevation by X X are not necessary in the development of the patterns, but are only shown to give a front view of the article when finished. The dotted lines drawn from the elevation to the plan show their relationship to each other. After the plan of the leader and leader head have been properly drawn construct the miter lines in plan, as indicated by A S, A R, V P and V O. Now, divide the curved portion of the profile J L of the elevation into an equal number of parts, as shown by the small figures. From the small figures, and at right angles to I J of the elevation, draw lines through the plan view, intersecting the miter line A S, as shown. From the intersections obtained on the miter line A S draw lines parallel to S R, intersecting the miter line R A. Likewise from the intersections obtained on R A draw lines parallel to R P, intersecting the miter line V P, as shown. For the pattern for the side of the head shown by 2' in plan, and which will also be the pattern for the side 1', proceed as follows: At right angles to N S of the plan draw the line E F, as shown, upon which place the stretchout of the profile J L of the elevation, as indicated by the small figures on the stretchout line E F. At right angles to E F, and through the small figures, draw lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn at right angles to N S from the intersections on the miter line A S. Trace a line through these intersections, as shown by Y Z. Extend the line M N of the plan upon the pattern, as shown by W X. Then will W Y Z X be the pattern for the sides shown in plan by 1' and 2'.

For the pattern of the front shown in plan by 3' proceed as follows: At right angles to P R of the plan draw the line G H, upon which place the stretchout of the profile J L of the elevation, as shown by the small figures, and draw the usual measuring lines, which intersect with lines of corresponding numbers drawn from the intersections on

the miter line V P and R A, at right angles to P R. A line traced through these intersections, as shown by W' and Z' X', will be the required pattern for the front of head shown in plan view by 3'. As the angles N S A, A R P and R P V are the same, it is self evident that the miter cut for each of the angles will be alike, and in practice the pattern for the front could be obtained by using the pattern for the side, in the same manner as has been explained in connection with Fig. 21. Before obtaining the pattern forming the transition from the square to the octagon it will be necessary to obtain a profile through A B in plan, for which proceed as follows: At right angles to R S of the plan draw the line A B, cutting the corner A of the leader, as shown. As the distance A B, or the distance at right angles to R S, is less than the distance U N, or the distance at right angles to S N, a profile will have to be obtained through the line A B from which to obtain the stretchout in developing the pattern. As the height of all points in this piece is the same, draw lines parallel to I J of the elevation, through the small figures in the profile J L, producing them indefinitely as shown. Transfer the intersections obtained on the line A B in plan to any horizontal line beneath the profile, to be constructed as shown by A' B'. From the points on A' B' erect vertical lines intersecting lines of corresponding number previously drawn, as shown from J' to L'.

For the pattern of the transition piece shown in plan by 5' proceed as follows: At right angles to R S of the plan draw the line C D, as shown, upon which transfer each separate space from the profile J' L' upon the line C D, as shown by the small figures 1', 2', 3', &c. At right angles to C D, and through the small figures, draw lines indefinitely, as shown, which intersect with lines of corresponding numbers drawn from the miter lines A R and S A at right angles to R S. Lines traced through these intersections, as shown by W' Y' and X' Y', will be the required pattern for the two transition pieces shown in plan view by 4' and 5'. Laps can be allowed on the pattern for front and sides, thus avoiding laps on the transition pieces and on the flat back shown in plan by M N. For the pattern of the flat back indicated by M N in plan view, simply prick through the elevation I J L K, Fig. 23, direct upon the metal, which completes the entire patterns required. Fig. 24 shows a perspective view of the leader head. The laps soldered against the back of the head are indicated at A.

The flanging of the square and octagon tubes as required is done upon the hatchet stake or by means of a flat plyers.

Forming the Head.

The same method is employed for forming the molding B D, shown in elevation in Fig. 21, as that described in connection with Fig. 20 in the last chapter. The bands 2 and 3 are made upon the hatchet stake and placed upon the former S, Fig. 20, in the position shown by X' A'. Hold X' firmly against the former S and press down A', which will form the cove shown by X' B'. The following sharp bends, shown in the profile B D in Fig. 21 by 6, 7, 8, 9 and 10, are made upon the hatchet stake by means of a mallet.

Soldering the Head Together.

After the heads have been accurately formed to their respective profiles the

laps are bent off with flat pliers, square or octagon, according to the plan of the head. Cut a small octagon bevel from heavy sheet iron, to be used in tacking the parts together. Tack with solder the various parts, beginning with the front and ending with the back. Now look down over the members of the molding so as to see if they are accurately placed with regard to one another and that the head is not lopsided. Then solder water tight and put in the pipe last.

There is always a risk in using the bevel that it may be moved in some way or other, thereby changing the angle, and if not seen in time often causing the work which was done with the bevel to be taken apart. To avoid this, any old piece of metal can be placed under the angle required and pricked through upon the metal and cut out with the shears; the angle will then be stationary and no risk will be taken.

Folsom's New Model Roof Snow Guard.

In Fig. 1 of the accompanying cuts is shown a new model roof snow guard offered by the Folsom Snow Guard Company, 33 Lincoln street, Boston,

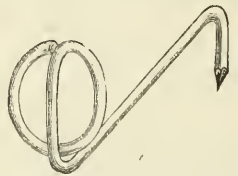


Fig. 1.—Folsom's New Model Roof Snow Guard.

Mass. The application of the guards is shown in Fig. 2, the point of the guard being driven in above each slate, the joints being left open for the shanks or body parts of the guards. The manufacturers recommend their use distributed over the whole area of a roof to obtain the best results, and state that each guard will protect 300 square inches on a $\frac{1}{2}$ pitch roof, 200 square inches on a $\frac{1}{4}$ pitch roof, 100 square inches on a $\frac{1}{8}$ pitch roof, and 50 square inches on a Gothic roof. It is remarked by the makers that where expense is a

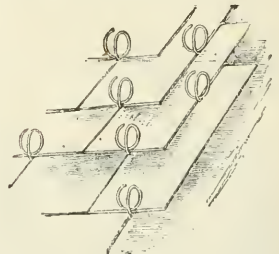


Fig. 2.—Application of Snow Guards.

consideration, or in sections where snow falls are light, five courses of slate at the eaves, with a guard in each joint, are more efficient than a guard rail, and at a fraction of the expense. The manufacturers state that the guards protect roofs by holding the snow immovable where it falls, and that the sun acting upon the large area exposed to its action while the heat of the roof acting upon the under side of the same area, allows

the snow to melt rapidly, leaving the roof clear. It is pointed out on the other hand that a guard rail holds the snow in a large drift on the eaves, where the heat acts slowly, so it alternately thaws and freezes, leaking through the roof and overhanging on the eaves.

FLASHINGS.

THE AMERICAN ROOFING COMPANY, St. Louis and Cincinnati, are running both of their plants at full turn. Their American metallic lathing is meeting with excellent success, and they have recently looked several large orders. They report an increase of over 50 per cent. in their business in the first two months of this year in comparison with last year, and state the present month gives indication of doing as well as the months of January and February.

THE E. E. SOUTHERN IRON COMPANY, St. Louis, report an excellent demand for the various forms of corrugated iron which they manufacture. They report the receipt of orders for three carloads in one day's mail, two of which went to Texas, the other to a Northern point. They have recently added new machinery to their factory and have increased their facilities for manufacturing, so that they are enabled to make prompt shipments of either large or small orders.

THE CHATTANOOGA STEEL ROOFING COMPANY, Chattanooga, Tenn., have in process of preparation a new and enlarged edition of an illustrated catalogue, which will be mailed free to any one making application. We understand the volume will be ready for distribution about April 1 and will contain something like 200 illustrations of cornice work and metal roofing. The company are among the largest manufacturers of metal roofing and galvanized iron work in the country, and have a well equipped plant provided with modern improved machinery.

JOHN SEATON & Co., 78-80 Washington avenue, Brooklyn, N. Y., are busily engaged on a number of important jobs covering cornices, skylight and roofing work. They have the contract for the glass and copper work of the winter garden now being built at the North Carolina residence of George W. Vanderbilt, for which the glass to be used is $\frac{3}{4}$ inch plate and the metal work of the most elaborate nature. The firm are also putting up the skylights, copper cornices and tiling and slate roofs of the new St. Luke's Hospital, and have under way a similar contract for the new building of the American Surety Company at the corner of Broadway and Pine street and for the Presbyterian Mission Building, corner of Fifth avenue and Twentieth street, N. Y. City.

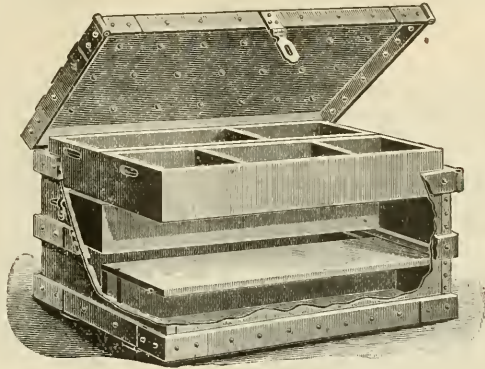
M. F. WESTERKREN, proprietor of the Architectural Sheet Metal Works, 205-207 East Ninety-ninth street, New York City, is busy just now on a number of important contracts. Among the work in hand may be mentioned the copper cornices and skylights of the new building of the University of the City of New York and the roofs and cornices of a number of school buildings throughout the city.

N. BORS, proprietor of the Eagle Cornice & Skylight Works, 30 and 32 Sullivan street, New York City, has recently associated with him as partner M. Steinmetz, with a view to enlarging the business. We understand that Mr. Steinmetz comes from Boston, where he enjoys the reputation of being a practical mechanic in this line.

Vanderman's Steel Tool Chest.

"The Vanderman Heating & Plumbing Company, Willimantic, Conn., are manufacturing a new form of their steel

the arrangement of the compartments, while Fig. 2, which is a section through the chest, further illustrates the arrangement of the drawers and details. Style D is made in four sizes. No. 1 is 11



Vanderman's Steel Tool Chest.—Fig. 1.—Broken View of Style D.

tool chest. The chest, illustrated in the accompanying cuts, is known as Style D and is, it will be noted, of different internal arrangement from the other chests which they have been making. The chests are made from $\frac{1}{8}$ inch

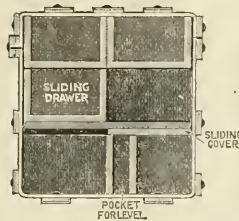


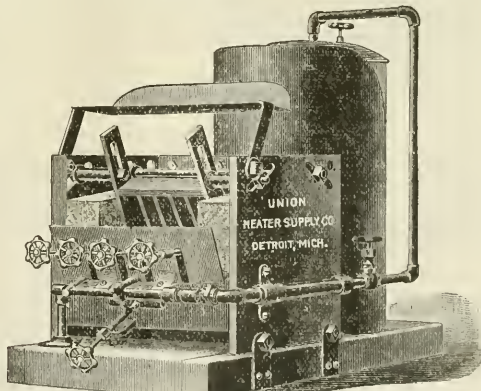
Fig. 2.—Sectional View through Style D.

cold rolled sheet steel with malleable corner pieces and hardwood braces and are fitted with heavy wrought iron hinges and hasps, the cover being so arranged as to be held open by support

inches deep, 12 inches wide and 24 inches long, while No. 4 is 19 inches deep, 20 inches wide and 42 inches long, Nos. 2 and 3 being intermediate in size.

Rivet Heater.

A very convenient apparatus is found by workmen in the rivet heater shown in the accompanying picture. It is made by the Union Heater Supply Company, 90 Congress Street, Detroit, Mich., and gasoline is used for the fuel. It is designed for use by boiler makers and bridge contractors and is adapted for heating rivets for any character of work, taking the place of a blast forge. It occupies little space and the fuel is easily handled and a steady heat is continuously maintained. It is claimed that as fast as the heated rivets are removed from the hopper others drop down to take their place, and that the rivets are heated as fast as one man can drive them. Air pressure is applied to the fuel tank after it is filled, and then



Rivet Heater.

from the back of the chest. The chests are furnished with brass lock and bolts to screw down the cover at the front corners. They are described as lighter than a first class wood chest besides being much stronger. They are neatly finished so as to present an attractive appearance. Fig. 1 shows the chest with the side broken away, illustrating

no further attention is required by the heater, which, without the dirt of coal, feeds the rivets hot and rapidly. The flow of gasoline is governed by a needle valve, and the burner is of a type that has proven successful and satisfactory. The convenience of the fuel and its low cost for the work accomplished are specially pointed out.

TIN PLATES.

The Black Plate Mills.

John Jarrett of Pittsburgh, secretary of the Tinned Plate Manufacturers' Association of the United States, has recently sent out to the members of that organization and to others interested in the tin plate trade a letter concerning the number of black plate mills in the United States, with present and prospective production, and other matters pertaining to this important industry. The letter in full is as follows:

In accordance with the action taken at the semi-annual meeting of the Tinned Plate Manufacturers' Association the following exhibit is submitted, giving, as we can obtain at present, the number of black plate mills in the United States, present and prospective, the capacity and the American market for consumption of domestic tin plate, &c.:

dustry, even with the stimulus of the highest protective duties, has ever made such progress in the same period of time. The industry has now reached a point that calls for the closest investigation on the part of those who meditate going into the business of tin plate manufacture, and closer relationship and affiliation between those already in the business.

It may be interesting to all concerned to know that the tin plate works in England and Wales have an aggregate of 519 mills. Of this number 232 mills were idle during the year 1894. The outlook for the tin plate industry is not the most promising.

SCRAP.

A LATE CABLE DISPATCH from Wales intimates that labor troubles are feared in the tin plate districts. The asso-

Pearl street, have lessed for a term of years the five-story building 245-247 Water street, having a frontage of 37 feet and good depth, where C. H. Bolles, Jr., the New York manager of Merchant & Co., Incorporated, will be pleased to meet on April 1 his many customers in New York and adjacent cities. The Brooklyn store of Merchant & Co., Incorporated, on Flushing avenue, will remain as before under the personal supervision of the New York office.

J. A. NEIL, president of the Montpelier Sheet & Tin Plate Company, report their works about completed and ready to go into operation about March 12. These works consist of four of Totten & Hogg's hot mills, also four of their cold mills. The tinning department will contain 11 stacks with capacity for tinning the entire product of the mills. These works, although located in Indiana, are virtually a Columbus, Ohio, enterprise, and it is there the general office is located. Harry Herbert, late superintendent of the New Castle Steel & Tin Plate Company, has charge of the works. Neil Fabrian & Co. of Columbus, Ohio, are the general agents of the company for the purchase of all material and sale of the products.

AN ITEM in the Pittsburgh Times records the fact that F. H. Laufman, the pioneer tin plate manufacturer of that city, celebrated the fifty-second anniversary of his joining the Methodist Church on March 3, by making an address in the Oakland Methodist Episcopal Church, in which he urged his hearers to be practical Christians. Commenting on this, the Times remarks: "It is probable that Mr. Laufman's employees to the last man would testify that he practices this precept. He was never known to hold out against the signing of the wage scale that any other manufacturer could work under, and he has frequently declared that he would rather not run his plant than do it by paying starvation wages. His plant at Apollo has often been running when many others were closed pending the settlement of disputes. His seems to be a case, too, where practical Christianity was profitable, as it is not of record that he was ever anything else than prosperous."

THE ANNOUNCEMENT IS MADE that the National Tin Plate Company will have their new plant, at Anderson, Ind., in full operation by May 1. Employment will be furnished to several hundred men.

THE WHITAKER IRON COMPANY, Wheeling, W. Va., have resumed work at their mills after a temporary idleness. Several of their sheet mills have been altered into tin mills and the company will shortly be putting out a good supply of black plate for tinning purposes.

A LETTER received from San Francisco, dated at the close of February, contains the following particulars in regard to the tin plate trade on the Pacific Coast: "There has been no great activity in tin plate, but the stock on hand has been very low and that has

Name of firm.	Location.	Mills completed and constructing.	Mills contemplated or prospective.
Somers Bros.	Brooklyn, N. Y.	1	1
U. S. Iron & Tin Plate Company.	Danvers, Pa.	1	1
Marshall Bros. & Co.	Philadelphia, Pa.	1	1
Lalanc & Grosjean.	Harrisburg, Pa.	2	1
Blairsville Rolling Mill & Tin Plate Company.	Blairsville, Pa.	2	4
New Castle Steel & Tin Plate Company.	New Castle, Pa.	10	1
Ellwood Tin Plate Company.	Ellwood City, Pa.	4	1
Canonsburg Iron & Steel Company.	Pittsburgh, Pa.	9	1
Monongahela Tin Plate Company.	Pittsburgh, Pa.	2	2
Pittsburgh Tin Plate Company.	New Kensington, Pa.	2	1
New Kensington Tin Plate Company.	New Kensington, Pa.	4	1
Wallace, Banfield & Co.	Niles, Ohio.	4	1
Falcon Iron & Nail Company.	Bridgeport, Ohio.	6	1
Etna-Standard Mill Company.	Cleveland, Ohio.	4	1
Britton Rolling Mill Company.	New Lisbon, Ohio.	4	1
Beaver Tin Plate Company.	Cambridge, Ohio.	4	1
Morton Tin Plate Company.	Canal Dover, Ohio.	1	1
Reeves Iron Company.	Martin's Ferry, Ohio.	4	1
Laughlin & Junction.	Cleveland, Ohio.	4	1
Crescent Sheet & Steel Company.	Wheeling, W. Va.	2	1
Whittaker Iron Works.	Wheeling, W. Va.	4	1
La Belle Iron Works.	Richmond, Va.	4	1
Old Dominion Iron & Nail Works Company.	Elwood, Ind.	16	1
American Tin Plate Company.	Gas City, Ind.	6	10
The Morewood Company.	Middletown, Ind.	8	1
Iroquois Iron & Steel Company.	Anderson, Ind.	4	2
National Tin Plate Company.	Montpelier, Ind.	6	1
Montpelier Tin Plate Company.	Atlanta, Ind.	3	1
Atlanta Tin Plate Company.	St. Louis, Mo.	8	1
St. Louis Stamping Company.	Cumberland, Md.	4	1
Cumberland Steel & Tin Plate Company.	Baltimore, Md.	4	1
Baltimore Iron, Steel & Tin Plate Company.	Chicago, Ill.	18	6
Illinois Steel Company.	Joliet, Ill.	2	1
Great Western Tin Plate Company.	Joliet, Ill.	2	1
Totals.		106	58
Capacity of 166 mills completed and in course of construction, at 30,000 boxes per mill per annum.		4,980,000	
58 prospective mills.		1,740,000	
Total.		6,720,000	
The consumption of tin plates in the United States per annum is about.		6,000,000	
Deduct supply for Pacific Coast, dressed meats and fish, and for Standard Oil Company, imported plates for export on which drawback is allowed, about.		1,500,000	
Net market for consumption of domestic plates.		4,500,000	

Operating the mills completed and in course of construction to their capacity would, therefore, give us an overproduction of 480,000 boxes per annum. Including the prospective mills the overproduction would reach 2,220,000 boxes, or 50 per cent. in excess of the net market for home consumption.

The tin plate clause of the McKinley bill went into effect on July 1, 1891. In less than a period of four years the American tin plate industry has so developed as to more than meet the requirements of the home market. Such growth is unparalleled. No other in-

ciated manufacturers propose to insert a strike clause in all contracts.

It is reported that the tinning plant of the Wheeling Corrugating Company, Wheeling, W. Va., which is ready for operation, will start into the business of coating tin plates for the market within a short period, procuring the necessary black plate from the Whittaker Iron Company's mills.

IN ORDER to be able to carry larger stocks of merchandise to meet the wants of an increasing business, Merchant & Co., Incorporated, now located at 247

exerted a favorable influence on prices. The Alaska salmon fleet is now being fitted out and demand is brisking up a bit. The result of these various influences, the light stock and the improved demand, has been to cause an advance to \$4.75 to \$5. Unless we pretty soon receive large invoices we may expect to see a further advance. We are now receiving some by rail, but at best this is an expensive method of transportation. The total imports since the opening of the year have been 34,258 boxes. The probabilities are that the pack of salmon and canned fruits will in 1895 be larger than ever. In 1894 there were 3,000,000 cases, 144,000,000 tins, of both packed. This required a good deal of tin plate."

THE AMERICAN TIN PLATE COMPANY'S Works, Elwood, Ind., are reported as turning out 6000 boxes of tin plate a week. The list of workmen has been nearly doubled recently. Nine mills are in operation.

THE McLANAHAN & STONE FOUNDRY COMPANY have shipped one of their largest bar shears to the Atlanta Steel & Tin Plate Company, Atlanta, Ind.

WE HAVE BEEN WELL SUPPLIED with blotters by N. & G. Taylor Company, Philadelphia, who take this means of calling attention to several of their brands of tin plates. One relates to the Brilliant and Royal Bright; next to Taylor's Old Style roofing; next to Columbia terne. Then comes the Taylor roofing tin; another relates to four standard brands which they enumerate, while two larger blotters give some further information about their Old Style, the features of its manufacture being referred to.

THE WORKS of the Ashburnham Tin Plate Company, Burry Port, Wales, restarted on Tuesday after a prolonged shut down.

ACCORDING TO ENGLISH ADVICES there is some talk of a general stoppage of the Welsh tin plate mill throughout next month.

THE NEW CASTLE STEEL & TIN PLATE COMPANY have purchased 6 acres of land lying to the north of their mill. It is excellently adapted for manufacturing purposes, being near the railroads and affording plenty of room for additions to the mill and for the side tracks needed.

LAST WEEK ground was broken for the erection of the new tin plate plant of the Laughlin Iron Company at Martin's Ferry, Ohio. A full description of this new plant has already appeared in these columns. The Totten & Hogg Iron & Steel Foundry Company of Pittsburgh have the contract.

THE *British Iron and Coal Trades Review* states that a firm of tin plate manufacturers at Llanelly, South Wales, have under consideration an offer made by a Chinese firm for the supply of tin plates for nine months in each year for the next seven years. The order had not yet been booked by last advices, but the firm referred to expect to secure it. This might open up a new market for British plates.

PRESS DISPATCHES from Baltimore, Md., assert that three new tin plate works are to be put in operation in that city or its vicinity this year. The largest will, it is said, be started with Chicago capital, Norton Brothers, the well-known can makers of that city, being largely interested. The Stickney Iron Company of Baltimore are also credited with the intention of building a tin

plate mill, to be operated in connection with their iron works at Canton. Orders for a 1000 horse-power Corliss engine and boilers for the new works have been placed with the Maryland Steel Company, at Sparrow's Point, Md. The third works will, it is rumored, be located at Curtis Bay, in conjunction with a rolling mill plant now being built there.

Trade Notes.

FOLLANSBEE BROTHERS COMPANY, successors to James B. Scott & Co., 122 and 124 Second avenue, Pittsburgh, Pa., in their advertisement elsewhere in this issue direct attention of the trade to their Scott's Extra Coated Guaranteed Roofing Tin Plate. The trade are requested to send for pamphlet giving description of this brand and *fac similes* of testimonials received from consumers. Attention is also directed to their Triumph Old Style, which is referred to as containing a little less coating than the above grade, but is a palm oil process Plate.

CARL H. ARWE, 1348 DeKalb avenue, Brooklyn, N. Y., issues an illustrated catalogue of supplies for the bar, wine and liquor trade which he manufactures. A variety of Bar Urns are illustrated and described, besides miscellaneous supplies. A price list accompanies the circular.

IT WILL BE SEEN by an announcement elsewhere in this issue that the Clifton Springs Mfg. Company, Clifton Springs, N. Y., are still in existence and ship large quantities of the Evans Patent Anti-Rusting Tinware. This well-known ware is distinguished by their trade-mark, which is a Greek cross.

THE ARTICLES of INCORPORATION of the Hygeia Ventilating and Manufacturing Company have been filed at Quincy, Ill. The stock is \$3000 and is held by George Bakewell, William Scharnweber and R. E. Tearse, \$1000 each.

WE ARE GLAD TO KNOW that the Joseph Dixon Crucible Company, Jersey City, N. J., are to continue their practice of sending out monthly calendars on office blotters, the same as they did last year. They are serviceable reminders of the Dixon Pencil.

BATES & ANDERSON will operate a brass foundry in New Orleans, La.

IN THE COURTS at Pittsburgh last week Geo. S. Griscom, receiver of the Moorhead-McCleane Company of that city, filed an answer to the application of the New York Life Insurance Company for permission to foreclose a mortgage of \$350,000 on the property of the company. Mr. Griscom states that in the present depressed condition of manufacturing interests if the New York Life Insurance Company are allowed to foreclose and sell the property it will be sacrificed and result in a total defeat of the hopes of the extension creditors in securing something on their notes.

A FEATURE in the Paint trade has been developed at Boonton, N. J., by the Atlantic Paint Works, who convert puddle furnace slag into a paint pigment, for which claims of superiority to the ordinary Oxide of Iron Paint are made, it being stated that it is much harder, absolutely non-corrosive, and is of greater covering capacity. It is asserted that the intense heat to which this slag is subjected in the furnace causes a complete union of metallic iron and silica,

forming the glass of iron, which for structural iron, bridges, metal roofing, boilers, ship bottoms, stacks and similar purposes proves a most desirable paint. It is stated that this Paint is particularly adapted to structural iron work located on or near the seashore. The company have a sales office at 275 Broadway, New York.

ON FEBRUARY 27 the creditors of the Sun Vapor Street Lighting Company of Canton, Ohio, bought in the plant and business of the concern at auction sale for \$87,025. The receiver has been operating the plant for the creditors for over a year and has made a profit. The company have lighting contracts for different parts of the country on hand, and the plant will continue in active operation.

THE WILMOT & HOBBS MFG. COMPANY, Bridgeport, Conn., whose rolling mill was burned recently, have made an adjustment of their insurance, which amounts to \$63,000, and the company are now preparing to rebuild. A large fire proof main factory will be built, and other plans are being prepared looking to the construction of one of the finest plants in New England.

THE YOUNGSTOWN STAMPING COMPANY, Youngstown, Ohio, have been reorganized under the name of the Youngstown Specialty Mfg. Company. The stockholders of the new concern held a meeting recently and elected the following directors: Wm. R. Stiles, Alexander Dickson, C. M. Russell, Thos. Nesbitt, Charles J. Wick, J. Craig Smith, Henry Tod, B. F. Wirt and Geo. E. McNabb. The directors organized by electing the following officers: J. Craig Smith, president; William R. Stiles, vice-president; Chas. J. Wick, treasurer; W. C. Hine, secretary and general manager. The line of goods manufactured by the Youngstown Stamping Company will be continued by the new concern, and will consist of Glass Oil Cans, Galvanized Oil Cans in large variety, Water Buckets, sugar makers' supplies, Fruit Cans and Sheet Metal specialties of various kinds. These will be augmented by a full line of Lard Pails, Paint Cans, Baking Powder Cans and Spice Cans. The newly organized company start out under very favorable surroundings and the outlook for a prosperous future is exceedingly encouraging.

AMONG recently chartered corporations in New York State is the Estey Wire Works Company of New York City, organized to manufacture and deal in Wire Cloth, Iron Wire and Brass Work and Wire Goods; capital, \$25,000; and directors, W. S. Estey, Cornelius P. McGuire and John C. Hessler of Brooklyn, and W. O. Chapman of Plainfield, N. J.

Plans have been completed for the consolidation in New York City of the Astor and Lenox Libraries and the Tilden fund, together with the private library of the late Samuel J. Tilden, under the name of the "Public Library of New York, Astor, Lenox and Tilden Foundations."

In an open letter written to the cotton growers of the South, A. B. Shepperson, editor of *Cotton Facts* and secretary of the Senate Sub committee on Agriculture, urges that food crops of every description should be raised on all Southern farms and that cotton should be made a surplus or money crop.

PLUMBING and GAS FITTING.

Association News.

New York State Plumbers.

The seventh annual convention of the Master Plumbers of the State of New York was held at Troy on Tuesday and Wednesday in Harmony Hall, which presented a pleasing appearance, having been tastefully decorated by the general committee of the local association. Large flags were draped at the rear of the platform and on the walls of the room, and small flags had been placed in the chandeliers. About 70 delegates attended the opening session. The delegates were introduced to Mayor Molloy by William H. Barnes, president of the local association, and the hospitality of the city was extended to the visitors.

The officers of the State association, who were nearly all present, are: President, William J. McDermott of New York; vice-president, Henry E. Wieber of Rondout; recording secretary, Chas. Schloesser of New York; financial secretary, Horace F. Wescott of Albany; treasurer, William G. Reid of Rochester. President McDermott opened the convention with an address and he was followed by Wm. H. Barnes. The convention then began its regular business.

The Committee on Credentials was James Temple, Troy; Henry E. Wieber, Kingston; J. C. Shumway, New York; J. Edward Jones, Albany, and John A. Creelman of Rochester. After hearing the report of the committee adjournment was taken until 2 o'clock in the afternoon. On the opening of the afternoon session Financial Secretary Wescott presented a report. Charles Schloesser, recording secretary, read a communication from Hudson plumbers, asking the aid of the State association to defeat the project to repeal the State plumbers' registration law so far as the city of Hudson is concerned. The communication was laid over to be taken up in executive session. A number of recommendations to be acted upon at the next national convention were adopted. A musical entertainment was given in the hall in the evening for the diversion of the delegates.

Wednesday morning was largely occupied with the reports of the committees of the organization, President McDermott occupying the chair. The association received a communication from the secretary of the National Association of Master Steam and Hot Water Fitters, in which it was stated that the formation of a State organization for the latter body was contemplated and that a meeting for that purpose would occur the next morning. The communication requested the co-operation of the plumbers' State association and that the members attend the meeting. The association adopted a resolution approving the project, and giving as the sense of the gathering that it would be well for as many of the delegates as possible to attend the session of the steam and hot water fitters.

A resignation of the Brooklyn association from the State organization

was received. A resolution was adopted directing that the resignation be held by the Executive Committee until after a committee of three from the association had conferred with the Brooklyn men. John Mitchell of New York, William Tobin of Syracuse and George Kirchoff of New York were named a committee to visit the Brooklyn association and induce it to continue its State membership.

A committee appointed to consider the action of the Executive Committee reported that the *per capita* tax of members of local associations belonging to the State association should be 75 cents. The *per capita* tax of members of the State association who were not a part of a local body was fixed at \$5, \$2 of which should be transmitted to the secretary of the National Association. This last named decree was adopted as a part of the constitution.

At the closing business session the officers were re-elected as follows:

President, William J. McDermott of New York.

Vice president, Henry E. Wieber of Rondout.

Recording secretary, Charles Schloesser of New York.

Financial secretary, Horace F. Wescott of Albany.

Treasurer, William G. Reid of Rochester.

The following were chosen delegates-at-large to the State convention: Wm. C. Vrooman of Schenectady; W. H. Barnes, Troy; John Yule, New York. Delegates to the national convention in June at Philadelphia: W. J. McDermott, John Yule and Charles Geiger of Buffalo.

The next State convention will be held in New York City.

Votes of thanks were given to the newspapers of Troy and trade papers for courtesies, and the local association, whose president is W. H. Barnes, received a special expression of gratitude for hospitality generously rendered. President McDermott spoke specially of Mr. Barnes' efforts.

The general committee of the Troy association of plumbers who had charge of the arrangements was: President, William H. Barnes; vice-president, James Temple; secretary, William F. Quinn; treasurer, William Ferguson; Martin Mulligan, Samuel Morris, Michael Kennedy, E. L. Murphy, George Bowman and Charles Willis.

After the adjournment the delegates and invited guests, numbering 150, were escorted to the banquet hall. William H. Barnes, president of the local association, presided, and on either side of him were John Mitchell of New York, president of the National Association of Master Plumbers, and William J. McDermott of New York, president of the State association. The other officers of the State association occupied seats at the president's table. After the banquet President Barnes, as toastmaster, introduced National President Mitchell, who spoke on "The National Association" in a forcible address.

State President McDermott outlined the purposes of the association and en-

couraged the members to renewed activity during the coming year.

J. L. Wells, chairman of the Executive Committee of the National Steam and Hot Water Fitters' Association, spoke on "Our Brother, the Steam and Hot Water Fitter." He referred to the intention to form a State association of the steam and hot water fitters. Vice-President James Temple spoke to the toast, "Our Local Association."

Samuel Morris was also called upon to speak, and he made one of his happy and effective speeches, wittily defending the plumbers from the criticism of the general public and other tradesmen and showing that the members of the plumbing trade were often compelled to bear censure which belonged upon the shoulders of others.

Edward W. Loth spoke for "Our Architects," and gave a tribute to the growth of sanitary science as illustrated in the plumbing of to-day.

In great good humor with the banquet and the successful convention, the assembly dispersed about 1.30 o'clock.

Ohio State Plumbers.

The annual convention of the Ohio State Master Plumbers' Association convened last week at Columbus and was opened by President Robert Raitz of Toledo. D. N. Kelly introduced Mayor Karb, who delivered a very happy address of welcome.

The work of the convention was then taken up. E. J. McNamara was made sergeant-at-arms and D. H. Roberts of Cleveland, W. P. Harper of Cincinnati and A. G. Miller of Lancaster were appointed a Committee on Credentials. A recess was then taken until afternoon, when the committee reported the following as delegates duly elected and authorized to sit in the convention: E. R. Brohl, Sandusky; J. W. Brown, Tiffin; Frank N. Olmstead, Conneaut; Charles Schriever, D. H. Roberts, A. L. Baker, Frank Feller, W. J. Worden of Cleveland; J. McVey, Lima; E. J. Nolan, F. E. Hopper, Charles Hicks of Cincinnati; W. G. Wacker, John E. Schultz, Al McLennan, Thomas Mannan, Toledo; A. G. Miller, Lancaster; James Sorenson, Ravenna; Thomas Clark, Mt. Vernon; H. Wilson, Defiance; E. Futrer, E. McNamara and William Halley, Columbus; E. S. Collier, Uhrichsville, and R. P. Willis of Springfield.

The Auditing Committee was composed of Loula Poplowski, Cleveland; Ed. Freheren, Columbus; James Gibson, Cincinnati; and the Committee on Resolutions of E. Dolan, Cincinnati; Warden Clive and Mr. Olmstead, Conneaut.

President Raitz in his annual address recommended that the dues of the association be increased from \$1 to \$2 in order to make possible the employment of an organizer, whose business would be the better organization of craftsmen in the small towns and cities. This recommendation was adopted. He further recommended that closer relations be maintained between the association and the manufacturers and jobbers, and that co-operation with them

be made more of an object than formerly. The general object of the association, in brief, is to secure a better grade of plumbing, the adoption of laws, both State and municipal, and to see that those only are permitted to do plumbing who are thoroughly competent and skilled workmen. To govern and control prices is not one of the objects of the organization.

A plumbing law was presented and it was decided to recommend its passage by the Legislature, and the Legislative Committee was instructed to present it for consideration at the next session.

The officers elected were as follows: President, Edward A. Futerer of Columbus; vice-president, E. J. Nolan, Cincinnati; secretary, Samuel Eswein, Columbus; treasurer, William Halley, Columbus; members of the Executive Board at Large, F. Hopper, Cincinnati; J. E. Schultz, Toledo; E. R. Brohl, Sandusky, and the retiring president, Robert Raiz of Toledo.

Delegates to the national convention to be held in Philadelphia were selected as follows: Louis Poplawski, Cleveland; J. M. McVey, Lima; alternates, F. Hopper of Cincinnati and A. G. Mills of Lancaster.

The next State convention will be held in Cincinnati in February, 1896.

An address was delivered by Inspector of Buildings Harris on the subject of plumbing in its relation to heating and ventilation. P. J. Magley also responded in a neat address to an invitation to talk to the convention.

The visiting delegates went to the Grand Opera House as the guests of the master plumbers of the city. Harrie D. Crane of Cincinnati, president of the National Association of Master Steam and Hot Water Fitters of the United States, was among the guests. After the theater all the delegates participated in a "Dutch lunch" at the Grand Central Hotel.

About 70 were seated in the dining room and enjoyed the tempting spread. Following the banquet came a season of speechmaking, story telling and singing, which lasted until an early hour in the morning.

THE PLUMBERS of Chester, Pa., are taking active steps for the organization of a master plumbers' association, and held their second meeting for the purpose of furthering the preliminaries last week. Another meeting will be held on Monday evening, March 11, when it is hoped to perfect the organization.

ABOUT 20 MEMBERS of the St. Louis Master Plumbers' Association and the Central Supply Association met in the Southern Hotel, St. Louis, last week to talk over matters of mutual interest.

THE MASTER PLUMBERS of Newburg, N. Y., held a meeting last week in the room of the Inspector of Plumbing at the City Hall. A. C. Smith was elected chairman and A. H. Pickens secretary. An informal discussion was held, lasting over an hour, but no organization was completed and an adjournment was taken subject to the call of the chairman and secretary.

THE Master Plumbers' Association of Toronto, Canada, has elected the following officers: President, Thos. Cook, 320 Parliament street; first vice-president, W. J. Burroughs, 353 Queen street west; second vice president, Geo. Guest, 71 Queen street east; secretary, K. J. Allison, 668 Yonge street; treasurer, A. Fiddes, 50 Jarvis street; sergeant-at-arms, Walter J. Garratt, 128

Bay street. The Executive Committee will consist of these officers, exclusive of the sergeant-at-arms.

Chicago Apprenticeship Code.

An apprenticeship code has been agreed upon by the Chicago Master Plumbers' Association and the journeymen's association, which will command the attention of all who are interested in the plumbing trade. There had been a code in use by some of the Chicago master plumbers for a number of years, and, later, Articles of Agreement were accepted by the two associations, which contained a section providing for an apprenticeship code. This code, which has now been adopted, is as follows:

ARTICLE 1. The term of apprenticeship shall be five years. The apprentice shall first register with the secretary of the C. M. P. Association, and after satisfying him of his ability to learn the trade he issues him a card to be retained by him during his service with him or any other employer. Said card must show five years' actual service. If he desires to leave he must apply to the secretary of the C. M. P. Association,

discretion of the examining board, ascertaining the length of time he has served and his knowledge of the trade, and if any are found competent to act in the capacity of a journeyman plumber, he shall receive a card which entitles him to the standard rate of wages.

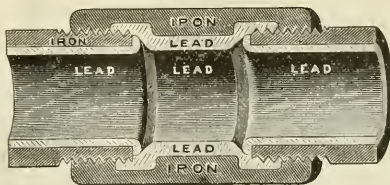
ARTICLE 8. The sons of master plumbers now at the trade shall not be controlled by this apprenticeship code, but all that start at the trade after the ratification of this code shall be controlled by it.

ARTICLE 9. After the ratification of this apprenticeship code by both associations the examining board shall meet as soon as possible to arrange the methods by which examinations shall be made.

JAMES J. BARRETT,
D. M. QUAY,
J. P. NEUBURG,
JOHN G. MITCHELL,
WM. W. PETRIE,
JOHN S. KELLEY.

Lead Lined Iron Pipe.

An article of wide interest and adapt ability is shown in the picture of lead lined iron pipe herewith. It is manufactured by the Lead Lined Iron Pipe Company, Wakefield, Mass., who guarantee all their pipe and fittings to stand



Lead Lined Iron Pipe.

who issues him a transfer after consulting his former employer.

ARTICLE 2. The apprentice for and during his five years' apprenticeship shall be under the jurisdiction of his employer.

ARTICLE 3. After serving his five years' apprenticeship he shall be examined by an examining board composed of the president and secretary of the C. M. P. Association, the president and secretary of the C. J. P. P. and B. Association, and the chief inspector of the Health Department of the city of Chicago, and if found competent by the board of his ability to act in the capacity of a journeyman plumber, he shall receive a card which entitles him thereafter to the standard rate of wages.

ARTICLE 4. Each employer may employ apprentices in the ratio of one to every two journeymen plumbers; provided, however, that each employer is entitled to one apprentice in each shop.

ARTICLE 5. Each employer may employ what is now known among the trade as junior plumbers in the ratio of one to each journeyman plumber; provided, however, that each employer first employs a journeyman plumber before employing a junior.

ARTICLE 6. It is expressly understood that no journeyman, junior or apprentice shall work for any employer in any shop where these rules are not enforced.

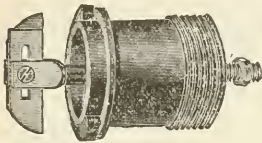
ARTICLE 7. All junior plumbers who may be working at the trade and belonging to the juniors' union at the time that this agreement is ratified by both associations, shall be left to the

a water pressure of 300 pounds. The pipe is made in 16-foot lengths in all sizes from $\frac{1}{2}$ inch to 4 inch and a full line of cast iron lead lined fittings are made for use with the pipe. The pipe is adapted for water or gas mains, and owing to the smooth inner surface it makes an excellent soil pipe, there being nothing on which there may be an accumulation, and a single flush clears the pipe. The fittings have a portion of the thread in the lead, so that water does not come in contact with the iron. In working the iron pipe may be cut with an ordinary pipe cutter, but the lead should not be cut until the two parts are slightly separated, then the lead lining should be cut with a knife and the end finished with a special tool that is furnished free for the purpose. In making up the joints no paint or cement is needed, as the lead lining of the pipe beds tightly into the lead lining in the fitting. The lead lining affords an excellent protection for the iron against rust and effectually stops all pin holes, sand holes, etc., and prevents, it is said, the leakage of gas even under pressure. For a vent pipe on a plumbing system there is no possibility of rust scales dropping down and closing the bends when the traps are likely to be siphoned. For exposed plumbing it presents a neat appearance as a soil pipe, and claim is made that it has all of the advantages of brass pipe at a much less cost. Over 2,000,000 feet of the pipe are said to be in use, and it has been used as a supply pipe in the Lincoln School and Armory Building in Wakefield and in the Carter office

building in Boston with satisfaction. The pipe is being used by a number of leading New England plumbers and in some fine buildings.

Salvage Closet Connection.

Sproul & McGurrin, 186 East Fulton street, Grand Rapids, Mich., have brought out the salvage closet connection herewith illustrated, which is designed for the repairing of earthenware closets of all kinds when the flush or



Salvage Closet Connection.

revent horn is broken off. It can be attached without removing the bowl, has the standard thread and can be put in place if only a part of the horn is broken off, without the necessity of having the balance smooth. The manufacturers state that this will not only save the closet, but will make it better than new.

The Star Couplers on Supply Pipes.

The accompanying illustration, which shows a sectional view through a house, indicates the application of the Star coupler to the supply pipe plumbing. These couplings, which have been illustrated in the columns of *The Metal Worker*, are useful for making various joints, as the diagram indicates. The illustration shows a system in all of which the straight sections are of wrought iron pipe and all the tees, elbows, crosses and fittings, bibbs, cocks, stops and wastes are for iron pipe, while all the curves and rounded sections are of lead pipe, the connection being in all cases made with the Star coupler. The coupler is a mechanical connection and is said to make an absolutely water tight joint under any pressure or temperature and a joint that can be uncoupled and coupled up again when necessary.

TRAPS AND VENTS.

WOLCOTT & PRATT have bought out the firm of C. N. Allen & Co., Newtonville, Mass. They came from Amherst, and have both had a practical experience in the business of plumbing and steam and hot water heating.

ABEL P. RANDALL has leased the rooms in Dixon House Court, Westerly, R. I., for a gas fitter's and plumber's establishment.

JOHN DELAHUNT of Fall River, Mass., who lost three children from alleged defective plumbing, has begun suit in the name of one surviving child for \$5000, alleging that the illness was caused by a defective drain pipe due to the negligence of the landlady.

THE PLANT of the National Lead Works has been removed to Cincinnati, Ohio, from Louisville, Ky., where it has been operated for several years. This concern will give employment to a number of men.

THE HUMPHREY MFG. & PLATING COMPANY of Kalamazoo, Mich., have

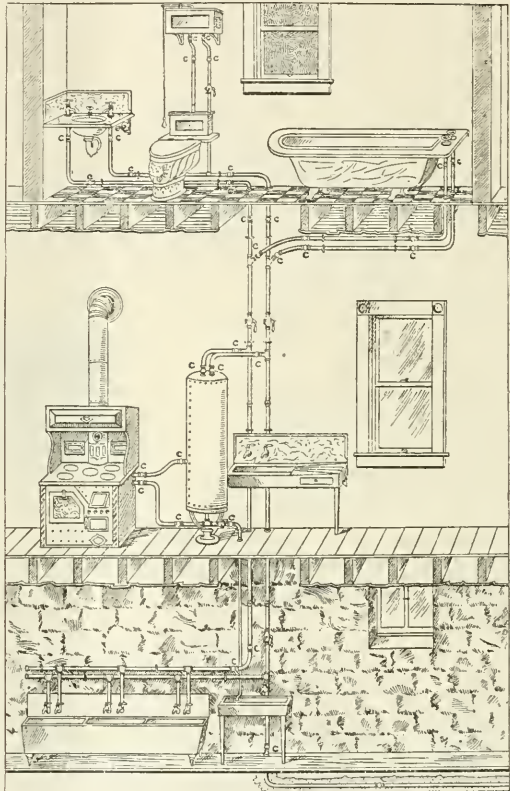
issued a very attractive catalogue of their automatic instantaneous gas hot water heater. This is a combined instantaneous water heater and bathroom warmer. The burner is so arranged that it can be swung out from under the heater, and in that position can be used to warm the bathroom. An automatic valve is used to prevent accident in case the supply of water should give out or the operator forget to turn it on. The gas burner cannot be lighted under the heater unless water is actually flowing through the valve.

THOMAS WALL, JR., and MICHAEL WALSH have been registered proprietors of Wall & Walsh, and Wm. and Wm.

cott, Newtonville, Mass., both passed successfully the examination for master plumbers.

C. L. HICKS, who was burned out recently, has leased the large store on the corner of Phoenix and Abbott avenues, Waterbury, Conn., which he is now fitting up for his plumbing business.

ANDREW J. FISKE, one of the prominent business men of West Newton, Mass., died of pneumonia at his home on Henshaw street, on Wednesday. Mr. Fiske was 56 years of age and was born in Framingham, where the members of his family were old residents. Mr. Fiske went to West Newton about 30 years



The Star Couplers on Supply Pipes.

Henry Murphy have been registered proprietors of Wm. Murphy & Sons, plumbers, Montreal, Canada.

KELLY & MCCORMICK is the name of a new plumbing firm at Ottawa, Canada.

J. C. MURRAY has moved his plumbing and tin shop to the Krogh Building on K street, Tulare, Cal.

DANBURG BROTHERS & BLAKE have opened a plumbing shop on Sumner street, La Crosse, Wis.

JOHN L. KNOWLES of Carnegie, Pa., has just completed arrangements to open up a branch of his business at 1063 Eleventh avenue, Altoona, where he will handle all kinds of electrical and plumbers' supplies.

ARTHUR T. PRATT and WALTER B. WOLCOTT of the firm of Pratt & Wol-

ago and had since conducted a plumbing and hardware business on Water-town street. He was at one time elected on the citizens' ticket to the common council and served one term.

ALL THE SEWER PIPE CONCERNS located in Ohio, Virginia, Pennsylvania and New York, with the exception of one Pennsylvania concern, have formed a combination. It has been decided that the works making sewer pipe from fire clay shall sell all their goods through the Central Sewer Pipe Company, with offices in Pittsburgh, and those making sewer pipe from shale will sell their product through the Union Sewer Pipe Company of Akron, Ohio.

THE PLANT of the Sharon Clay Mfg. Company, Sharon, Pa., manufacturers of vitrified salt glazed sewer pipe and building blocks, resumed operations on

the 25th ult., giving employment to 60 hands.

THE PLEUGER & HENGER MFG COMPANY, St. Louis, Mo., issue under recent date their No. 8 catalogue of water works specialties. In an announcement to the trade they call particular attention to their line of water works specialties, especially their large variety of hydrants, which they say are constructed upon the best mechanical principles. Service boxes, valve boxes and gate valves occupy the first 20 pages of the pamphlet. Then come their hydrants, of which a very great variety is shown. The hydrants are illustrated by general and sectional views and full descriptive particulars are given, so that a thorough understanding of their constructive features may be readily obtained. Tables of sizes and prices accompany the illustrations. Street washers are shown in large variety and a number of special hydrants, self-closing and non-wasting and other kinds. The larger part of the pamphlet is given up to goods of this sort, and any one having need of water works specialties of the kind indicated will find a very large assortment to choose from in the goods of the Pleuger & Henger Mfg. Company.

AT A GENERAL MEETING of the Board of Health of Schenectady, N. Y., the following communication from the Board of Plumbers and Plumbing was received and adopted: "Resolved, that the water test now in use in this city for the inspection of plumbing work be kept on all soil and drain pipes not less than five hours, and that the test also include all lead bends and rough lead work under the floor or floors."

THE WILKINS MOTOR PUMP OR HYDRAULIC WATER LIFTER is illustrated and described in a little pamphlet distributed by the Columbus Brass Company, Columbus, Ohio, who manufacture the engine. It is a very compact and serviceable pump, and those interested in it will find complete illustrations and descriptions in the pamphlet. A number of testimonial letters refer to the excellent working of the machine. The firm also manufacture water closets, sanitary cabinet work, lavatories, stop cocks, &c., of which brief reference is made in the circular.

PROF. JOHN A. BARRETT, in a special report of the Subway Commissioners to Mayor Schieren of Brooklyn, states as the result of his investigations that it appears indisputable that earth currents from trolley roads in that city are causing extensive electrolysis of water pipes and other pipes and conductors imbedded in the ground at an indeterminate but serious rate. It also appears that there are practicable means at command which are being neglected, and which, if properly organized and applied, would largely abate if not altogether arrest the ongoing destruction.

AT THE EIGHTH ANNUAL MEETING of the Master Builders' Exchange at Philadelphia, held recently, it was reported that the Mechanical Trades Schools attached to the exchange had enjoyed a prosperous year. The classes were well patronized, especially in the plumbing class, although the stonemasonry and blacksmithing classes had not their full quota of pupils. In order to increase the efficiency of the schools, a bill has been prepared and presented to the Pennsylvania State Legislature asking for an appropriation in support of the schools. The exchange has an endowment fund on hand amounting to \$8245, which has been invested in bonds and

notes of the exchange for the benefit of the Mechanical Trades Schools.

A new steam and gas fitting and plumbing establishment is to be opened in the Fleming Block on Second street, Little Falls, N. Y., about March 1, by Bradford & Co. Mr. Bradford has been employed by McDermott & Ashenbush. He has engaged a first-class plumber and will be prepared to do all kinds of work in their line.

JAMES GIBSON, a contractor of Sandy Hill, owns three houses in Victory avenue, Schenectady, N. Y. Lately finding some plumbing work needed in the houses he proceeded to do it himself. This was in plain violation of the provisions of the plumbing code. Gibson was arrested upon the charge and brought before Justice Eisenmenger to answer. The Justice stated that as this was the first offense he would heed the plea for extenuation. He therefore fined the accused \$15.

JOSEPH J. CASHEN, Meriden, Conn., who for many years has worked for his brother, William B. Cashen, is soon to go into the plumbing business himself at 65 Church street.

BAUER & SCHNATTER have removed their plumbing establishment to the new Cable Block on Market street, Sandusky, Ohio.

GLEASON & LANE's plumbing store, Cortland, N. Y., was visited by a small fire last week.

DESMOND & WARD have opened a new plumbing shop in Robertson's Block at 91½ Salem street, Glenwood, Mass.

WEST & BRANCH, a Richmond, Va., plumbing firm, have dissolved partnership.

MCONEY & BAINE, plumbers, Nashville, Tenn., have dissolved partnership and T. J. Mooney will continue the business.

THE PARTNERSHIP heretofore existing at Louisville, Ky., in the name of the Smith Strouse Plumbing Company, has been dissolved.

ROBERT J. MOONEY had a small fire in his plumbing shop at Summit, N. J., last week.

THE BILL before the Tennessee Legislature providing for a plumbing inspector in towns of 5000 inhabitants has passed the second reading.

ANDREW MOE, late of the firm of Heckstadt & Moe, has opened up a new plumbing shop, 202 Kelsey street, Esu Claire, Mich.

THE BOARD OF HEALTH of Hudson, N. Y., have decided to retrench in the expense of city government by dispensing with the Examining and Supervising Board of Plumbers and Plumbing, and have petitioned their representatives in the Legislature to have the town of Hudson exempted from Chapter 602 of the laws of 1892.

TWO GAS LEAKS that might have proved disastrous have been caused in Brooklyn by thieves, who cut off the lead pipe on the gas meter connections.

WM. WASHINGTON, who has had charge of F. J. Hoffman's plumbing department and tin shop at Fenton, Mich., for the past two years, will open a general plumbing and repair shop at Marlett.

R. M. WILSON, Rome, N. Y., and 92 Walker street, New York City, is sending to the trade a four-page circular of the Solid Sanitary copper bathtub, which has been recently put on the

market. The circular is printed in two colors, the picture of the tub being a copper color.

CHAS. P. VANDEVEER, formerly with Dubois & Darrow, is now on the road representing Dimock, Fink & Co., 80 John street, New York, who carry a full line of plumbing supplies.

C. V. HAYNES was in New York recently visiting the plumbing trade in the interest of the King trap, made by the King Mfg. Company, West Troy, N. Y.

JOS. J. McCABE, Boulder, Col., has sold out his plumbing business to C. F. Willis & Co.

THE AMERICAN TUBE WORKS, Boston, Mass., are issuing a new catalogue of their seamless drawn brass pipe for plumbing, which they say is tested to 1000 pounds hydrostatic pressure. Sixty pages are used in giving the names of plumbers in different cities and the names of their customers where brass pipe has been used in plumbing. In a recapitulation of the buildings it appears that their brass pipe has been used in 13 club houses, 100 homes, hospitals and hotels and over 700 private residences.

WE ARE INDEBTED to the Goulds Mfg. Company, with main office and works at Seneca Falls, N. Y., and warehouses at 16 Murray street, New York City, for their illustrated catalogue and price-list of pumps and hydraulic machinery. The volume, which bears date of the present year, is the thirty-fifth edition of their catalogue, and is a most elaborate and valuable publication for those who wish to keep informed of what is in the market in the line of hydraulic machinery and pumps. The volume, of oblong shape, measures 8½ x 7½ inches in size, is handsomely bound in linen, with the title and firm name in gilt letters. As showing the extended assortment of goods made by this well-known firm, it may be mentioned that there are over 350 pages in the catalogue, nearly every one of which contains one or more illustrations of goods which they make. To assist the buyer in searching out the articles he is after in so large a volume, a carefully arranged alphabetical index is given at the beginning of the book, while at the end is an index of figures. All sorts of pumps for all sorts of purposes are included, it being impossible even to enumerate them, there being small pumps for domestic work and large ones for greater service. Power pumps of many kinds are shown, likewise electrical pumps, water rams, air pumps, spraying pumps, hydrants, sinks, drive well points, drills, valves, cocks, taps and dies, &c., are some of the miscellaneous goods that are included. The catalogue contains many new goods and illustrations of their application which have not before been published that will interest the hardware and plumbing trades, to whom the book will be furnished on application.

An engineering undertaking of no small difficulty is to be carried out as soon as the weather will permit on the steel bridge of the New York, New Haven & Hartford Railway over the Thames River, between New London and Groton. The draw of the bridge, which is one of the largest in the world, has worked eastward about 8 inches, and the task before the engineers is to pick up the eastern span and launch it just that distance toward Groton. It weighs 2,600,000 pounds.

STOVE TRADE NOTES.

The Local Stove Trade.

The local stove trade during the last four or five weeks has been in a fairly satisfactory condition and indicative of gradual improvement. To make this assertion without some qualification, however, might be misleading, for the experience of many would be at variance with the statement. After such prolonged depression, signs of first improvement will by many be hard to detect and will be found to exist at first with the larger houses having a line of customers taken from all neighborhoods and from all classes. While with such houses a slight increase in all departments and for nearly all the different grades of goods—cheap, medium and high priced—indicates general improvement, it would affect the small trader so very little that many would be unable to note any change at all. The matter of a sale by such traders of one or two more stoves for a corresponding period, or an increase of a few dollars in the business, might be put to the score of chance rather than improved condition.

Some doubt of an upward turn to business may yet be admissible, and favorable accidental conditions may underlie the increase in the stove business not only during the last four or five weeks, but thus far during the year. Until, however, the year grows older and present indications are set at naught by reverses, there is ground to believe that the tide has set toward better business.

The extreme cold wave last month had some influence on trade and added to the demand in February this year over February of a year ago. Extreme cold cannot be too lightly considered in its bearing on the stove trade, even coming, as the late blizzard did, when the stove business was practically over for the season. To whatever extent it was better because of business improvement it was benefited by the cold wave, of course, and helped to make of February a good month. It is a satisfaction, even if general business is not greatly on the mend, if accidents or abnormal conditions of weather shall give the stove business a special impetus in every month during the year. Had the terribly cold weather continued longer it might not have helped as much as it did, for it would have interfered more with the spring trade, which, from present appearances, may not be delayed beyond the ordinary time when spring activity, governed by the breaking of winter and opening of navigation, usually sets in. The increased trade in

February among the larger wholesale houses was equal to the January increase.

As to the future of the stove industry, it is getting to be a question what the term "stove business" now implies and embraces. It has heretofore been confined to the manufacture and sale of cooking and heating constructions for coal fuel, and gas, gasoline and oil appliances have been put in another class, and were for a long time considered as enemies of the regular stove business and counted among the elements of destruction and against the interests of that industry. It is a question whether they should not be nowadays considered as a whole, owing to the extent to which manufacturers, jobbers and retailers include these constructions in their lines and the constant addition of new appliances burning these fuels which the stove trade seem more and more eager to take in to supply the gradual falling off in demand for some coal constructions, owing to the encroachment of these new devices.

The Ohio Stove Trade.

The majority of the reports from manufacturers of stoves and ranges in this section are encouraging, but there are a few founders who are still experiencing unsatisfactory returns for efforts expended upon the trade. With one exception information received from the trade this week testifies to the fact that a larger volume of business was transacted in February this year than in the corresponding month last year, and one manufacturer reports an increase of 100 per cent., and all manufacturers heard from unite in the belief of more confidence among buyers, with more disposition to anticipate wants than heretofore. Though there is a steady and gradual improvement, the resumption of normal conditions is not anticipated until the laboring classes are more fully employed.

But while the increase in the volume of business is a matter of congratulation, there is not a little complaint of low prices and small profits, nor does there seem to be any immediate prospect of a change in this respect. This could hardly be expected, however, as yet and can hardly be looked upon as a discouraging feature, all things considered.

Dealers and manufacturers in Indiana as well as Ohio report accumulated orders and increased activity in making shipments. Orders for pig iron from stove foundries do not indicate any

unusual activity, but there is a fair buying movement of a healthful character.

Money in this market continues active, manufacturers being among the largest borrowers, and rates of interest have still further hardened during the week. The outgo of currency to the country, too, has continued on a liberal scale, the reduction in the readily available supply having a marked effect in shaping the course of the exchange market.

The Manufacture and Sale of Warm Air Furnaces from New York State and its Effects on the Heating Stove Trade.

BY WILLIAM H. LANDERS, SUPERINTENDENT SYRACUSE STOVE WORKS.

In the year 1875 the writer was an apprentice in the stove and hardware store of Owen O'Neill, Son & Co., Utica, N. Y. Their business was selling at retail stoves, furnaces and shelf hardware. They also conducted a large job shop for all kinds of heavy work in sheet iron, copper and tin, and which was successfully carried on. This establishment was started in 1816 and had proven a successful enterprise for its owner, who had amassed a fortune from conducting it during these long years. Some well-known manufacturers and mechanics have worked in this shop in its earlier years. One of these was Henry Burden, the originator of the Burden Iron Works in Troy. He was in his earlier days befriended by Owen O'Neill, who helped him in his first steps to successfully establish his business, which is famous throughout the country at the present time. There was the late John Carton, who constructed the first Carton furnace, who in those days was noted as a skilled coppersmith and all-round mechanic, and afterward became head of the Carton Furnace Company, and when he died left his sons a splendid reputation as mechanic and business man.

In this store on an average about 500 stoves were sold annually. Half of these stoves were principally heating stoves of the various kinds made at the time. Their leaders were the Shining Light, made by Bussey & McLeod, and the Light House, made by Ransom & Co. Both of these stoves were successful in working qualities, and many of them are in use at the present day. They proved profitable and popular sellers, and the stove business was always a profitable one. Utica then contained a population of about 35,000 people,

and had ten retail stores, two of them being manufacturers of stoves who also did a retail business. We are merely illustrating what one concern did in those days of selling heating stoves and I suppose it would be a fair average of every house throughout the State in towns of the same population. That volume of business in selling stoves was satisfactory to manufacturer and retailer. No one will deny that business was so that all the men were compelled to work overtime to keep up with the rush during the fall months.

Very few furnaces were then manufactured in New York State outside of Albany, Troy and New York City, and, as an indication of the comparative number of stoves and furnaces sold, the firm mentioned in that year sold only two brick set furnaces of the Culver make. One of these was sold to a jeweler in Utica, and the other set in a church at West Winfield, which was about 30 miles south of Utica. It was an extraordinary thing to sell a furnace, and when sold the average price was in the neighborhood of \$400 or \$500, and consequently only those who could well afford it would purchase a furnace. The local trade in Utica was principally Richardson & Boynton's and Carton's. Mr. Carton, Sr., personally measured, inspected and saw set up all of his furnaces which were near by, and their success locally no doubt was due to the carefulness with which they were set. This gives us a fair presentation of the comparative standing during the early seventies of the trade on heating stoves and furnaces sold by an average dealer who was not a manufacturer of either. It is hard to realize that this was but twenty years ago, in view of the changes that have occurred in that period.

The firms who had a reputation as furnace manufacturers in those days were Richardson & Boynton of New York City and Fuller & Warren Company of Troy. These two concerns practically controlled the furnace business throughout the State. Boynton's Gas Tight and Lawson's Ruby furnace were standard goods, and were known by their reputation. It was almost impossible to try to convince a dealer that any other furnace had any merit. Five years later, 1880, was the commencement of the boom in the manufacture of furnaces and the gradual decline of parlor stoves. In that year the manufacture of furnaces became a feature of great importance to foundries that were more or less interested in the melting of iron. Commencing at Buffalo, we find the Harris furnace manufactured merely in a local way. At Rochester Trotter & Geddes did quite a local business. At Syracuse John F. Pease & Co. manufactured the Economy furnace, and had just become fairly well established and were branching out for the wholesale business. At Utica the Carton Furnace Company were showing a spirit of progress and were pushing

outside for trade. We believe the first example of real enterprise shown in the manufacture of furnaces to which today Utica owes so much was the endeavor of Mr. Francis Kernan, who successfully organized, created and built up a business on the Palace King and Queen furnaces. At Albany Perry & Co. were making the Standard; Fuller & Warren Company were at Troy, while M. Mahoney and Henderson were well known as furnace manufacturers. In New York City there were many local manufacturers: Richardson & Boynton, Boynton Furnace Company, Thatcher Furnace Company, Abendroth Bros., Union Stove Works, J. L. Mott Iron Works.

This may not be a complete list, but it will give an idea of a number of firms who at that date, 15 years ago, were manufacturing furnaces in a general way. The convenience and comfort of furnaces and the lower range of prices made them more popular, while the better heating of all rooms in a house and the saving of labor for those who carried coal and ashes were thoroughly impressed upon the people, especially upon those building new houses, and furnaces were commencing to find a ready sale. More brick set furnaces were sold at that date, and the simpler portable furnaces had not been well introduced, for as a rule they were not considered as good a furnace, as so much of the heat was lost by radiation, and the brick set was more profitable.

During the 80s all the different manufacturers pushed sales throughout the State and other States and into other fields, and the business became more profitable. Greater enterprise and more salesmen were added and the capacity of the different foundries was increased to take care of the increased business. The chief trouble then was the want of practical knowledge of the different dealers as to how to set a furnace to get good results from it, and in some cases many furnaces were taken out for not being as represented, and the result was the manufacturers were compelled to have salesmen who possessed a practical knowledge and ability to successfully sell and set and instruct dealers in order to get satisfactory returns at the end of the year. After one or two seasons dealers became more practical and showed more enterprise, and competed more for the sale of furnaces, and the result was the writer has seen in small country towns 25 and 50 furnaces set in a single season, and the sale of a furnace, it must be remembered, is equal to at least two parlor stoves.

To show the production of furnaces we will take the average year, say, 1890 and offer as an estimate made merely from observation the following number of furnaces: Buffalo, 500; Rochester, 500; Corning, 500; Syracuse, 2500; Utica, 8000; Troy, 1500, and New York City 8000 furnaces, or in all over

20,000 furnaces. These 20,000 furnaces will take the place of at least 40,000 parlor stoves. Every dealer in the stove and range business will agree with the writer that where a furnace is put into a house ordinarily there is a parlor stove used in the parlor and sitting room and one in the bedrooms or the second story. One or more parlor stoves will be used according to the size of the house. In some places, no doubt, furnaces will take the place of three parlor stoves, so in averaging it up that two parlor stoves are displaced by one furnace, we believe we are perfectly sure that in selling these 20,000 furnaces the manufacturers of heating stoves are deprived of a business equal to 40,000 parlor stoves. We do not believe that in the exchange of the heating apparatus from parlor stoves to furnaces retail dealers have made any more money on the sale of furnaces. The change has made a larger volume of work and it has increased the sale of many other things which go to make up a furnace business. No doubt the volume of it in dollars and cents is larger than it would be if it had been parlor stoves.

Competition on furnaces since 1890 has been fierce both in retail and wholesale, and prices have gradually declined. We do not believe the retailer has made any more money on furnaces than he did on a good sized range or parlor stove. The sale of furnaces has, however, been productive of some good things, for the middle classes, who are consumers of heating stoves, have been able to exchange them for a furnace at a cost of from \$100 to \$150 for an ordinary eight-room house, and with greater comfort, no doubt, as the result. It is now the modern way of heating houses ranging in price from \$1000 to \$5000; houses that cost above the latter figure being more apt to use steam and hot water, as the owners are able to buy the more expensive and, we believe, the more thorough heating plant.

IN DISCUSSING the conditions existing in the local stove trade a writer in one of the Albany papers intimates that improved systems of heating have had a marked effect in reducing the demand for parlor stoves. In recent years there has been a widely extended movement toward an improvement in heating methods, and in every new house hot water heaters or steam pipes are placed about it in such a way as to make the establishment comfortable while stoves are relegated to the background. This change in the method of heating has seriously affected the sales of stoves, and in the opinion of a prominent dealer these constructions are likely hereafter to be used almost exclusively for cooking purposes. Dealers, however, seem to have some hope for next year. The severity of the cold during the last two months has necessitated hot fires, and many old stoves have been burned out. The effects of this will be felt next fall, when it will be necessary to replace them with new stoves. The writer states that the business of the stove dealer has been far from a profitable one during the past winter.

ODD PLATES.

THE ECLIPSE GAS STOVE COMPANY of Rockford, Ill., issue gorgeous diplomas to those who are deemed worthy of the honor conferred. The diploma sets forth that the person named is a graduate in the school of the Ancient Reckless and Independent Order of Prevaricators and is permitted to continue lying—ghost, fish, war and mother-in-law stories excluded. The signatures are R. E. Morse, president of the school of liars, and U. R. A. Nother, secretary to His Infernal Majesty. We are not advised that the distinction imposed by this diploma is an honor eagerly coveted and highly prized when obtained.

THE PECK WILLIAMSON HEATING AND VENTILATING COMPANY of Cincinnati have opened a branch house at Webster City, Iowa, making that city a distributing point for Iowa, Nebraska, the Dakotas and Minnesota. E. R. Swan is the manager of the Webster City branch.

THE MICHIGAN STOVE COMPANY use postal cards of their own design, varying decidedly from those furnished by Uncle Sam. Some of these cards are of linen, some are wood but all are unique. They are generally of large size, so as to be conspicuous in the mails. The latest one issued is a large card 7½ inches long by 4½ inches wide. The side for the address is perfectly clear, containing nothing but the address of the person to whom it is sent. Turning it over, a handsomely printed and strongly worded advertisement of Garland stoves is read, the point of which is that the Michigan Stove Company undertake to protect legitimate dealers. Garland stoves are not found in department stores, furniture stores, &c.

WE ARE INDEBTED to Isaac A. Sheppard & Co. of Philadelphia, Pa., and Baltimore, Md., for a series of handsomely printed circulars illustrating and describing some of their leading specialties. The first of these circulars relates to an entirely new line of portable ranges known as the Royal Excelsior, a substantial construction of rich and effective ornamentation. This range has been designed to meet the requirements of dealers in towns in which the old style cook stoves still retain the favor of many buyers as well as of those dealers with whom the range business has become well established. The Royal Excelsior is made in a number of styles and sizes and is adapted for use with either hard or soft coal or wood. Among the leading features may be mentioned large end hearth which slides forward, exposing a roomy ash pit with balled cast iron ash pan, large swinging end door with ample draft slide, capacious flues, Duplex, Dockash or shaking and dumping grate, which can be quickly removed without disturbing either the water front or brick linings and feet, which are independent of the skirt base. Another circular, which is printed in colors, relates to Royal Fidelity ranges intended for burning hard or soft coal, coke or wood. The wide popularity of these goods has caused the manufacturers to add a larger range of this class to the assortment of sizes and varieties heretofore offered. The Royal Fidelity is fitted with horizontal boiler made by the company of the best material, riveted and finished by hand, a pressure of 150 pounds per square inch being guaranteed. The range embodies the modern features and is ornamented in a style which is both clever and effective,

The goods are offered in portable form and also for brick setting. The third circular deals with the Fidelity fire place heater, a very attractive stove designed, the makers state, to secure the most pleasing appearance and the most efficient service possible at a moderate cost. It is made of cast iron throughout, has heavy fire pot, draw center grate, inside magazine cover, brick linings above the fire pot, dust flue and cast iron ash pan.

JOHN THOMPSON, who was for a number of years foreman of the molding department of the Clinton Stove Works, at Troy, N. Y., died at his home in Lansingburg, February 28, at the age of 58. He had been ill for six weeks from an injury sustained at the foundry. An operation was performed in the hope of saving his life, but was not successful. The deceased was an upright citizen and a trusted employee of the Fuller & Warren Company. He was a Knight Templar and a veteran of the late war. He leaves a family.

PRESIDENT NATHAN B. PERRY of the Perry Stove Company, Albany, N. Y., says regarding the stove trade: "In common with most other branches of business the stove trade has not been up to the standard, but we are hoping for an improvement this year."

B. B. NICKERSON, for a number of years in charge of the office of the Spicer Stove Company, Providence, R. I., and well known to every one who has visited that establishment, is now representing the company on the road in New England, where he will push the Model line of stoves and ranges. If Mr. Nickerson is received by the trade with half the courtesy he has always displayed toward visiting traveling men, his lines will fall in pleasant places.

ACCORDING to our English exchanges, the recent prolonged spell of severe cold weather in that country caused a remarkable increase in the demand for gas and oil stoves. The comfort and convenience of these appliances for heating small rooms not supplied with regular fire places has received a recognition never before accorded to them, and their use is likely to be largely stimulated in the future.

ISAAC A. SHEPPARD & Co., Philadelphia, are putting on the market the Royal Excelsior range, which is of the high oven type and high grade. It is made with high shelf, high closet, end ash pit, with balled pan, water front, reservoir with their patent spigot, Eclipse covers which lift from the middle and nickel trimmings. The range has many other attractions, including an attractive proposition. If a dealer orders one, gives it a high polish and displays it conspicuously, and is not satisfied that it is a seller, he may return it inside of 30 days. If kept longer it is a sale.

L. E. ROBERTS and J. SNYDER of the Thomas, Roberts, Stevenson Company, Philadelphia, were visitors at the New York office, 250 Water street, this week. They are placing an oven thermometer in the oven door of their gauge door ranges to aid the cook in correctly gauging the temperature in the oven. They report that the step has been very popular with the dealers and their customers.

THE LEHIGH STOVE & MFG. COMPANY, Lehigh, Pa., are using the Cooper oven thermometer in their Model Lehigh range. They say: "It tells the cook when the oven has reached the right heat and helps to keep it

there." G. W. Baeder is calling the attention of the trade in New York and vicinity to this feature and their general line of Lehigh goods.

THE ESTES STOVE COMPANY have been organized at Birmingham, Ala., to carry on the business hitherto conducted by the firm of Pennington & Estes.

LUTHER & LEDERHOS have moved their gas stove shops and salerooms to 9 and 13 Dearbrosca street, New York.

SAM S. UTTER, 113 Beekman street, New York, recently made a visit to Boston, Mass., where he moved his stock to a more commodious store at 79 North street. The new store is under the management of H. C. Whitten. In Louisville, Ky., his line of oil stoves will be handled by the O. K. Stove & Range Company.

W. JACKSON'S SONS, 246 Front street, New York, are furnishing 110 fire places for 11 fine residences being built by Geo. Edgar at Eighty-ninth street and Eighth avenue, New York.

THE TAUNTON IRON WORKS COMPANY of Taunton, Mass., are now running their plant four days a week and are meeting with a gratifying demand for their specialties. Among their recent shipments was a large order for Chicago.

OSCAR G. THOMAS of Taunton, Mass., is running his works four days a week and will increase the time as soon as business will warrant.

THE CENTURY STOVE COMPANY of Dighton, Mass., have recently resumed operations at their plant after a shut down covering a brief period.

SPENCE, BAGGS & Co. of Martin's Ferry, Ohio, closed their works for a short time during the latter part of February, on account of the scarcity of coke.

THE RICHMOND STOVE COMPANY of Norwich, Conn., resumed operations last week with a full force. It is stated on the authority of a local paper that this is the first time in months that the full number of employees has been at work.

THE MECHANICS' FOUNDRY COMPANY of Rockford, Ill., are busy on the patterns for three sizes of a hot air furnace which they will soon put on the market.

SCHILL BROS., Crestline, Ohio, owing to the gratifying success which has attended the introduction of the New Idea line of hot air furnaces, first offered the trade in 1892, have been compelled to remodel their present plant in order to obtain better and increased facilities for the production of their goods. The company will, it is said, shortly add a line of steel ranges to their productions which will embody some new and special features.

THE QUICK MEAL STOVE COMPANY, St. Louis, Mo., advise us that the pleasant weather prevailing throughout the West during the past two weeks has served to materially increase their business. Among the recent orders secured by them, they note shipments made to Frankfort-on-the-Main, Germany, and a point in Canada.

THE MARCY STOVE REPAIR COMPANY, 74 Beekman street, New York, are ready to furnish repairs promptly to the dealer for any stove that he will soon have orders to put in condition for the summer cooking, or the parlor stove that should be repaired before it is stored.

TRADE REPORT.

The Iron Market.

Pig Iron.—In Foundry Iron the movement in the New York market is slow. In New England some pretty good orders are coming up. The lower grades are selling at lower prices than ever in Eastern Pennsylvania. No. 2 is being pressed for sale in this market also. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

A fair demand and unchanged prices are reported from the Philadelphia Pig Iron market. Foundry Irons are comparatively steady at quoted rates, but there is a full supply and no indications of a desire on the part of consumers to make long contracts. If there should be any movement toward higher prices for Coke or Ores, it would doubtless be reflected in stronger prices for Pig Metal, but buyers seem to have no faith in an upward movement in anything, and until it becomes an accomplished fact it is hardly likely that they will abandon the attitude of indifference which they have so long maintained. Ordinary quotations are about as follows for Philadelphia rail deliveries, and from 30¢ to 50¢ less for water, or at points such as York, Harrisburg, &c.:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.00 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

A distinct improvement is noted in the demand for local Pig Iron in the Chicago district. Sales have been more numerous and the inquiry is expanding. A noticeable improvement is referred to in the tone of foundrymen in this vicinity. Sales of Southern Coke Iron have also been larger, but are almost entirely confined to Soft brands. Inquiries are good, and better buying seems promised for the immediate future. Lake Superior Charcoal has also sold more largely than for some time, although transactions are still confined to small lots. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch No. 1.....	10.25 to 10.50
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1, Soft.....	10.00 to 10.25
Southern, No. 2, Soft.....	9.50 to 9.75

In the Pittsburgh market the heavy purchases of Bessemer last week have been followed by a lull, and a light demand is looked for for some time. Foundry Irons continue in very moderate demand. Quotations are given as follows for cash:

No. 1 Foundry.....	\$10.50 to \$10.65
No. 2 Foundry.....	9.65 to 9.75

Beyond the large contracts for Pig Iron placed in the Cincinnati market

last week, a fair volume of business is reported, aggregating about 2000 tons per day. Among the buyers have been agricultural implement makers, Stove and general foundries, rolling mills, pipe works and manufacturers of specialties such as radiators. Many large contracts for Pipe are pending, and several important contracts have already been placed by Eastern cities at prices even less than were current a year ago, but this fact is justified by the lower prices ruling for Pig Iron. A heavy buying movement of No. 3 Foundry and Soft Irons is anticipated soon, to cover Pipe contracts placed and pending. All in all, there is a more encouraging feeling and a better outlook. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The St. Louis Pig Iron market is reported as extremely quiet, and sales do not cover anything but small lots. The only sale of consequence during the past week was 600 tons of No. 2 Foundry, sold to a local consumer, the price of which is reported to have been on the basis of \$6.60, f.o.b. cars Birmingham. This price is 15¢ per ton less than the ruling price of this grade, and shows how anxious some furnaces are for business. It is only fair to state that other furnaces refused to quote less than \$6.75, and of course these prices were not considered. The impression is gaining ground, however, that the weaker furnaces have their order books fairly well filled and will soon, cease to be a disturbing factor in the market. The consumption shows a gradual increase, and consumers show no disposition to order shipments withheld. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Sales of Pig Iron in the Birmingham, Ala., district are reported as showing a very material improvement; in one instance between 20,000 and 25,000 tons are reported as the sales for the past week. One sale of 10,000 tons this week. The general feeling is that these large sales will stiffen the market, especially if this week indicates a continuance of them. Stocks still show some increase, though the effect of these sales will probably be to reduce them before the end of the month. Demand for prompt shipment is very urgent in some instances, indicating lack of stocks in consumers' hands. Quotations are as follows: No. 1 Foundry, \$7.50 @ \$8; No. 2 Foundry, \$6.75 @ \$7; No. 3 Foundry, \$6.50; No. 1 Soft, \$7; No. 2 Soft, \$6.50 @ \$6.75.

THE CLEANER MFG. COMPANY of St. Louis, Mo., were chartered last week, with a paid-up capital of \$5000, for the purpose of manufacturing and dealing in polishes and cleaners for metals.

Metal Market.

Pig Tin.—During the week wholesale prices advanced 0.10¢ @ 0.15¢ and subsequently receded to about the starting point. The rise was due partly to a measure of confidence brought about by the smaller shipments from the Straits during the last half of February and consequent reduction in the visible supply for Europe and America. The turn downward seemed to have been somewhat in the nature of a natural reaction, assisted more or less by free selling on the part of "bear" operators, who made the most of the opportunity when the market looked strongest, and applied pressure upon "bullish" sentiment moderating. Meanwhile contracts involving considerable Tin, chiefly deliveries from March to July inclusive, were dealt in, and a liberal amount of actual Tin for prompt delivery changed hands, the greater portion of which soon passed into the possession of jobbers and consumers. Apart from the decrease in the visible supply, there is no change in the situation. Stocks here and in London are still quite heavy, and, together with the quantity afloat, assure ample supplies, if, indeed, not a weighty surplus, for some time to come. Straits Pig in small parcels at 14½¢ @ 15¢ per lb. Bars fetch about 1¢ advance on these prices. The consumptive demand continues fair.

Copper.—There has been another fall in prices all along the line, a result of more or less sharp competition for orders. On the decline home consumers have purchased somewhat liberally, but not on a large scale. Some export business has been marked, chiefly for the Continent, but not enough to counteract the natural influence of present heavy output of the mines. Upon the whole, the market may properly be described as unsettled and weak. Jobbing business has been merely of a routine character. The price of small lots of Lake Ingot from store is about 10½¢ per lb. Exports from this country in January, as per Bureau of Statistics returns, were 5290 tons Ingots, Bars, &c., and the equivalent of 1363 tons fine Copper in Matte.

Sheet Copper.—In its general features the market shows no variation from the condition noted in our last report. Consumption is still below the average, yet a larger volume of inquiry seems to indicate the existence of a better feeling among buyers. Small lots of Sheet Copper are quoted by jobbers at the net list price, 14¢ per lb.

Pig Lead.—The condition of the wholesale market is practically the same as it was a week ago. No change to speak of has taken place during the interval. Transactions involving more than a few carloads have been strictly the exception, and inquiries have afforded no indication of change in the former policy of consumers under which purchases were restricted as much as possible to actual needs. Prices are weakish, although no quotable change has occurred. American Pig in small

lots from store is quoted $3\frac{1}{2}\phi$ @ $3\frac{1}{2}\phi$ lb.

Spelter.—Small orders have been more numerous than for some time past and have resulted in a very fair business being done. Some improvement is noted in the tone of the market also. Reliable Western brands, in small parcels, are quoted by jobbers at $3\frac{1}{2}\phi$ @ 4ϕ lb from store, but inferior stock can be secured at a shade less.

Antimony.—In jobbing quantities a fair business has been done. For small quantities the ruling quotations are 8ϕ for Hallett's and $9\frac{1}{2}\phi$ for Cookson's.

Nickel.—Sellers quote at 35ϕ @ 40ϕ , according to size of lot.

Tin Plate.—Business has been surprisingly light, except for a somewhat spasmodic activity in Cokes for both spot and future delivery, to supply the current needs of can makers. Yet even this class of consumers shows comparatively little interest in purchasing, their demands being still away below the average for the season. The prices at which some of this business has been closed are reported to have been extraordinarily low. The reported suspension of work at various foreign mills and reduced output at others has failed to enliven buying interest in the slightest degree, and does not appear as yet to have curtailed the offering. Nor does the fact of exceptionally low prices seem to offer any inducement to consumers to stock up. These conditions alone serve to keep the market in a remarkable state of weakness, and, in addition, where necessary to retain or secure custom, American manufacturers have met foreign prices, thus adding to the demoralization of the market. In some instances, it is said, prices made on American Plates have been actually lower than those quoted for foreign stock of like character. In other cases, imported Plates are reported to have been sold at a lower price than the lowest at which they could be imported. March has not so far shown any ground for solid encouragement to the Tin Plate trade at large.

The condition of the British Tin Plate market is thus described in a special London cable dispatch of March 5 to *The Iron Age*: Tin Plate is unchanged. Limits from America check business, being very low. Board controlling 391 mills held a meeting on Thursday, and decided to decrease the make by one-third at each mill. The Ashburnham works have restarted. Stocks at shipping point about 247,000 boxes, in the face of further decrease in mills. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20.....	9/3 @	9/3 @
Siemens Cokes, IC 14 x 20.....	9/3 @	9/3 @
Ternes, 20 x 28.....	10/6 @	10/6 @
Charcoals, IC 14 x 20.....	10/6 @	10/6 @

Sheet Iron.—The volume of business in both Black and Galvanized Sheets has increased considerably and some large orders have been placed with mills up to July 1. Jobbers' quotations for small lots of No. 27 Common Iron from store rule at about 2.65¢. Galvanized Sheets in similar quantities are quoted at the discount of 75 and 5 ¢ @ 75 and 10 ¢ off.

Chicago Report.

Scrap.—Wrought Scrap of best grades has been in fair demand, but cheap qualities are neglected. Cast is in light supply with a good inquiry. Heavy Steel Scrap is doing well. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$4.50	.....
Machinery Cast.....	5.50	.....
Malleable Cast.....	5.00	.....
Stove Plate (free of burn).....	4.00	.....
Burnt Iron and Grate Bars.....	3.00	.....
Sheet Iron and Hoops.....	2.00	.....
Flow Steel and Breaking		
Stock.....	4.00	.....
No. 2, such as Shovels, Hoes,		
&c.....	3.00	.....
Old Boilers—whole (Iron).....	3.00	.....
(Iron)—cut in single		
Sheets and Rings.....	5.00	.....
Old Gas-Pipe and Boiler		
Tubes.....	5.00	.....
Cast Borings.....	3.00	.....
Turnings.....	4.00	.....
Hammers.....	7.50	.....
Copper Bottoms.....	6 ¢	.....
Copper Cliffs and Heavy.....	7 ¢	.....
Heavy Brass.....	8 ¢	.....
Light Brass.....	8 ¢	.....
Pipe Lead.....	2 ¢	.....
Tin Lead.....	2 ¢	.....
Zinc.....	2 ¢	.....
Rubber.....	4 ¢	.....

Anthracite.—Only a fair trade is reported by dealers. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8.10	8.35
Sioux City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.95	8.20
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and	
Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

WITH THE OPENING of spring, according to the calendar, and the advance of the season and the coming of more moderate and warmer weather, there is a quickening in trade and a more active preparation for the business which is expected during the next few months. Seasonable goods are in especial demand, and there is on the whole little complaint to be made in regard to the volume of trade in this line. There are also indications that in Builders' Hardware trade will be at least fair, but with the large production of goods there is much competition for such orders as are going. Carpenters' and Mechanics' Tools are receiving their share of attention, and it is thought that business in this class of goods will be better than last year, but in some of them prices, though confessedly very low, are more or less irregular. In heavy goods, on the other hand, there is a slightly firmer feeling, and in some cases extreme figures have been withdrawn. The trade is anxiously awaiting the time when there will be satisfactory indications of a general stiffening in the market, but as yet this is not the case. Merchants are taking the view that careful buying is the correct policy and are placing their orders for only such goods as are necessary, and manufacturers are called upon by their larger and smaller customers to carry

stocks from which goods can promptly be furnished on rush orders. At the same time manufacturers are endeavoring to avoid undue accumulation of stock on account of their past experience in connection with the decline of prices. It is probable, therefore, that the stocks of goods in the hands of both manufacturers and jobbers are considerably lighter than usual.

Advice from Chicago.—Better weather has rejoiced the hearts of Shelf Hardware jobbers, as it has brought with it a largely increased demand for goods. A strong symptom of the better condition of trade throughout the country is shown in the recent buying of new stocks. Quite a number of new Hardware firms have made arrangements to start at various points in the West, and have bought stocks in this jobbing center during the past two weeks. Regular demand from the trade also appears to be more general, covering almost all lines of goods, showing that the country is extremely bare of stocks. Those ordering in small quantities are usually the most clamorous for prompt shipments. The only kind of goods now neglected is Builders' Hardware, but the building season has not opened throughout the country. This branch of trade may be expected to continue dull for some time to come. The demand for Tinware has fallen off considerably, although within the past day or two orders again showed a tendency to increase. Collections have recently been somewhat better.

Notes on Prices.

Wire Nails.—A fair but not especially heavy volume of business is being done by the manufacturers, who are, however, well supplied with orders and refer to the situation as satisfactory, with indications of a good steady business during the season. Their prices are firmly maintained. The prices at which a few jobbing houses are offering Nails purchased before the recent advance have apparently had comparatively little effect on the market as a whole, the trade understanding pretty well the circumstances which induce this cutting in prices.

Advice from Chicago.—Manufacturers almost invariably report a quiet week, but as they are well fixed for orders they are not anxious about the situation, especially as stocks are moving a little better from the hands of jobbers, who are enjoying a much better trade. The same irregularity in their prices continues as previously reported. Quotations range from 95 cents to \$1.05, Chicago, yet those who are making the outside figures report an excellent movement in small lots, which is fully as large as in previous seasons.

Cut Nails.—There is little new in the Cut Nail market. Prices for small lots from store are steadily held at 85 to 90 cents. The volume of business is comparatively small.

Advice from Chicago.—Manufacturers report trade still quiet. Jobbers quote small lots from stock at \$1.

Barb Wire.—An improved demand is reported for Barb Wire and the manufacturers refer to the situation as on the whole a very satisfactory one. Prices are well maintained by the manufacturers on the basis of \$1.90 for carload lots of Four-Point Galvanized at mill. Some leading jobbers continue, however, to undersell the manufacturers, thus producing some irregularity

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CHICAGO, MARCH 7, 1895.

Large sizes of both kinds.....65&102
Fittings for both kinds.....65&102

THE METAL WORKER.

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Cold Weather Casualties.

During the spell of severe cold last month a number of accidents in heating systems were reported. Some were of a serious character, doing considerable damage. In one case a radiator was taken from a hot water system and caps put on the ends of both the flow and return mains, stopping the circulation through this portion of the system, which, being the larger portion of the system, interfered with the circulation and resulted in an explosion which caused considerable damage. It is not an unusual thing in house heating systems for the fire to be neglected to the extent that its effect is practically nullified, and in such weather as was experienced in February there seems to be little to prevent a system freezing up, which was the experience in a number of cases. In some cases the pipes were split and parts of the residence flooded, with the attending damage. In other cases the ice stopped the circulation in a hot water system and the return of condensation in steam system, but fortunately they were discovered in time to prevent serious accident, which would have resulted from kindling a fire.

Natural Gas in Foundry Cupolas.

The foundry trade is considerably agitated over the reports which have appeared almost simultaneously regarding the perfecting of new processes in producing ordinary castings and malleables. From Anderson, Ind., comes the statement that at last a method has been discovered for the successful use of natural gas or oil in melting pig iron and making ordinary castings. At Muncie, in the same State, malleable castings are also claimed to have been successfully made in a furnace operated on natural gas. Springfield, Ohio, comes to the front with another dis-

covery by which it is asserted that malleable castings can be made as easily as ordinary castings, avoiding the time-honored practice of annealing, which requires several days, although the period has been greatly shortened within the past few years. All these processes are extremely valuable if on more general trial the claims of the inventors shall be fully sustained. The use of natural gas for melting pig iron in foundry cupolas would be confined within a comparatively limited area, but would be of much importance to foundrymen within that area. The use of oil would be of much wider application. Further developments in the several directions indicated will be awaited with much interest.

Reckless Building.

A deplorable instance of unscrupulous greed and reckless disregard of human life on the part of certain builders and contractors, combined with criminal negligence on the part of the officials intrusted with the authorization and inspection of new buildings, has recently occurred in New York City. A group of tenement houses in course of erection suddenly collapsed, burying five men in the ruins. Examination of the demolished structure revealed the fact that, in nearly every detail of their construction, the building laws had been outrageously violated. The mortar used was composed of a small proportion of sand, dug from the cellar and mixed with loam. Moreover, it had been applied when the temperature was below the freezing point. When the thaw came it melted into mud, consequently the building collapsed like a house of cards. Still further, crumbling stone was used for the foundation, and old bricks and beams, from the demolished building which formerly occupied the ground, had been used in the new structure. Party walls had no foundations at all. In every respect a more elaborately planned death trap could hardly have been designed. Responsibility for the disaster, according to the verdict of a coroner's jury of experts, is shared by several individuals, including the owner, architect, builder and the inspectors of the Building Department. All the guilty parties will, it is announced, be held to a strict accountability for this crime, and it is hoped that exemplary punishments will be meted out. The statement of a well-known New York builder, that he can point out other tenement houses in the city which have recently been run up with the approval of the Building Department under sim-

ilar disgraceful conditions, is not calculated to promote confidence in the trustworthiness of that city department, one of whose officials admitted at the inquest that he was in the habit of marking plans for new buildings "O K" without examining them. The trouble is that, along with the other municipal departments, it has for a long time been run by men chosen for their political "pull," rather than for practical knowledge of their profession.

A remarkable revival of activity has been apparent in building circles in New York City during the past few weeks, as shown by the statistics published by the Building Department. The outlook for the industry during the coming spring promises very well. Real estate men report that unusually large amounts of capital are coming into the market for investment in new buildings, a marked feature of the situation being the projection of plans for important structures to take the place of old fashioned buildings in the district between Canal and Fourteenth streets. A table, published by the *Record and Guide*, exhibits the remarkable improvement which has occurred both in the number and in the value of the buildings planned so far this year, as compared with the same period of last year. To the end of the first week in March, 707 buildings, estimated in value at \$17,665,359, were planned, as against 368 buildings, valued at \$6,812,233, in the first 11 weeks of last year.

Superintendent Preston of the New York State Banking Department, in his annual report for last year on the savings banks, trust and safe deposit companies in the State, makes a very favorable showing for these institutions in spite of the prevalent and continued uncertainty in financial circles and the general business depression which compelled larger withdrawals of savings than would have been the case had the situation been more prosperous. On January 1 there were in the State, under the supervision of the department, 125 savings banks, 38 trust companies and 18 safe deposit companies, with combined resources of \$1,391,297,-648.36. This shows an increase of \$68,775,927.59 over the same date for 1894, when there were 125 savings banks, 36 trust companies and 17 safe deposit companies. The deposits in the 125 savings banks of the State, as shown by their January reports, were \$643,873,574.44, an increase for the year of \$36,784,125.46. No savings banks were closed during the year.

The New York *Journal of Commerce* published this week a special report, carefully prepared, of the present condition and the prospect of business in some 17 of the leading trades of the Eastern section, which affords gratifying evidence that business in this section is returning to normal conditions and that a good and healthy spring trade may be expected.

THE LETTER BOX.

Ventilating a Barn.

From J. A., Vermont.—Some time ago I received an order to put an 8-inch ventilator into a barn, the space to be ventilated being 20 by 27 feet, 8 feet high, and the basement of the same size. There is an opening $2\frac{1}{2}$ inches wide and 10 feet long under the basement door which is to furnish fresh air. I ran the pipe direct from the basement through the floors and roof and carried it about 8 feet higher than the ridge. I put two 8-inch square holes in it in the stable part, one near the floor and one near the ceiling, and provided them with sliding doors to regulate the draft. The ventilator, however, does not work and my opinion is that the pipe is too small. There are six horses and a cow kept in the stable and pigs in the basement. The pipe is placed at one end of the stable floor. Would it be possible to get as good results in ventilating both rooms with one pipe as with the use of separate pipes, and if so, what size pipe would it be advisable to use? Would it make any difference whether the pipe went up in the center of the room or at one end? I will be glad to have the opinion of the readers on this subject.

Steam Diaphragm.

From W. R., Cold Springs, N. Y.—Please describe through the Letter Box the construction and uses of a diaphragm as used on steam heating plants.

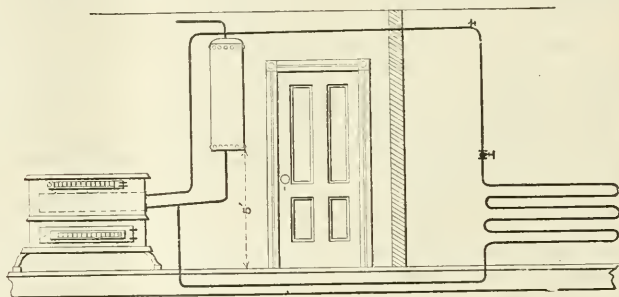
Note.—The diaphragm most frequently used on steam plants is in connection with draft regulators. In some cases they are made of sheet metal and in others of leather, but more generally they are made of the same composition of rubber. They are placed in a chamber with a space on both sides, one side having an opening for the admission of steam from the boiler. On the other side is a piston to which is attached levers which connect with the check draft and the ash pit draft. When the pressure of steam distends the diaphragm one end of the lever is lowered and the draft at the ash pit is closed and that at the smoke pipe opened. When the pressure of steam falls below a certain degree the opposite operation results.

Will It Circulate?

From F. T. M., Steelton, Pa.—I have read the letter "Will It Circulate?" in *The Metal Worker* of February 26, and I desire to ask a question on a similar subject. I want to heat my dining room with hot water from the kitchen boiler or with the boiler itself, and there is a door between the two rooms which interferes with running the pipes on the proper incline. I have made two sketches, which I inclose. In one I put the boiler near the stove and in the other the boiler is put in the dining room and the pipe run over the door

to it and to the radiator, then the return is run under the floor back to the boiler in the dining room. I would like to know which will work best. I see in "Kitchen Boiler Connections" that in some cases the return is allowed to dip lower than the water back, but do not know to what extent it may be dipped with success.

Answer.—We have reproduced but one of the illustrations sent by the correspondent, as it shows the arrangement that will be satisfactory. If the boiler was placed in the dining room an objectionable heat would be furnished during the summer season. If the brass connection is taken out of the top of the boiler and a galvanized iron pipe of the full size run up to a point above the top of the door and a cross put on it at this point, the difficulty of passing the door may be overcome.



Will It Circulate?

From the top of the cross the hot water service pipe to the house fixtures may be run. From the side of the cross, with a fall from it to the radiator, a $\frac{1}{4}$ inch pipe may be run, and owing to the fall the air cock will not be necessary, as the air in the radiator will pass up to the house service and escape at the faucets. A valve on this pipe may be placed either at the radiator or at a more convenient point to prevent circulation in the summer season. The return from the radiator may be dropped below the floor and carried over to the water back and connected at the water back rather than at the bottom of the boiler. If this pipe passes through a cold cellar it would be well to insulate it. In making a connection at the water back the same plan should be followed as at the top of the boiler, except that a tee should be used. At the lowest point on this pipe a stop cock should be placed, so that in case it is desired to drain the entire system at any time it may be done and no water left in this pipe to freeze and burst the pipe.

Pipes Burst by Freezing.

From XENOPHON, Tarrytown, N. Y.

—If freezing water exerts a pressure of 30,000 pounds per square inch, why is it that all pipes which freeze do not burst?

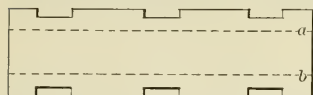
Answer.—The manner of freezing in pipes, as well as their elasticity, controls the amount of overpressure that causes them to burst during the freezing process. Water is at its greatest density at 39° F. Its density decreases slightly in falling to a temperature of 32° F., which causes its bulk to increase. When frozen its specific gravity is 0.922, 0.998 being the specific gravity of water at 32° F. Its bulk increasing in proportion to the specific gravities as water and ice, it expands 0.08553 its volume in freezing, while its compressibility being but a minute

portion, its pressure becomes enormous when confined in iron, which contracts under the increasing cold and accounts for the bursting of the strongest shells or the flowing of solid ice out of a hole in a shell that is strong enough to produce a solid flow. The circumstances controlling the stability or bursting of pipes by freezing may be found principally in the interlocking of a portion of water between two points at a little distance apart by the pipe freezing solid at these points first, and as the freezing process crawls along the pipe with solid plugs behind it, the water of the central section by cooling comes under enormous pressure. On the contrary, when the freezing takes place slowly and uniformly along an exposed pipe, the ice is formed on the inner surface, growing gradually toward the center, and undue pressure is prevented by the water flowing away through the central opening, and when finally the center is closed uniformly along the section frozen the pressure is not increased by the continued fall in temperature, because as soon as it be-

comes solid its bulk decreases with increasing cold. The bursting power of confined water by cooling from 39° to 32° F. is beautifully illustrated by filling a bottle full with water at 39°, corking it tight and laying it on a cake of ice; it will generally burst before the water begins to freeze. The freezing of a drinking tumbler is an interesting experiment, illustrating both phases of this phenomenon. A tumbler full of water, if frozen from the bottom upward, seldom breaks. If frozen from the top down it seldom escapes fracture.

How to Bind "The Metal Worker."

From OLIVER TWIST.—The advantages that are to be gained by having the weekly numbers of *The Metal Worker* all gathered together by means of some suitable binding cannot be over-estimated, and it is fully appreciated by those who, when they wish to refer back for information about some particular thing they remembered seeing, long ago perhaps, and which would apply to the job on hand, would have to search through a pile of *Metal Workers* three feet high, which had been thoroughly mixed by previous searches. The following method will fill a need that has long existed among the tinner in coun-



How to Bind "The Metal Worker."

try towns, where it is next to impossible to get a book bound at all, and to say the least would be very expensive. The first thing to do is to take out the steel binders so as to allow the advertisements to be separated from the reading matter that we wish to save for future reference. This is composed of that part laying between Editorial Notes and Contents inclusive. If you take the trouble to take the square shears now, you may trim the papers all to one size, which will give them a better appearance when finished. Take two wire nails about 2 inches long and solder a copper burr to the head of each one. Gather up the papers in rotation according to date from January to June inclusive, and drive these nails at a point $4\frac{1}{2}$ inches from each end and $\frac{1}{2}$ inch in from the back edge right through the whole bundle. Now cut off the points that project through, and solder on burrs to correspond with the opposite side. Measure the thickness of the volume, and cut out a piece of tin like the cut, leaving 1 inch outside the lines *a* and *b*. Cut out three notches, as shown, each 2 inches long, which will form hinges for the covers to turn on, and wire with No. 12 wire. Bend at right angles on the lines *a* and *b*, which represent the thickness of the volume. Put this on the back of the book, and 2 inches from each end drive a nail through and solder on a burr as before, only having the burrs outside the metal cover this time. This will securely fasten the cover to the book. All that remains to do now is to cut out two pieces for the back and front of cover. Fold them on four sides and solder on to the hinges, and you will have a volume which has cost you about ten cents

for material and is neat in appearance and very useful. You can obtain from *The Metal Worker* office an index for each volume, which will make it easy for reference.

Water Hammer in Pipes.

From G. A. L., Manchester, Vt.—What effect will the closing of a fire hydrant quickly have on the plumbing fixtures in a house when the water supply is taken from the main and the range boiler has no relief valve? Would it not cause the boiler to leak or some of the other fixtures to burst, the water pressure being from 100 to 125 pounds? If any readers of *The Metal Worker* have had trouble of this sort I shall be glad to hear from them.

From G. J. M., Oshkosh, Wis.—I have done a job of plumbing in a house where the authorities required the use of self closing work. Now, when they draw water at the sink and let go of the faucet it pounds over all the house. Another trouble is that the ball cocks drop and splash the water out of the flush tanks. There are no air chambers in any part of the house and we cannot very well put them on the closet supply, neither would it be convenient to place them at the sink. Would it remedy the trouble if the air chamber was put in the cellar, or what would be the best thing to do under the circumstances? Please tell me what would make the best air chamber, what size to use and all about it.

Automatic Damper Regulator.

From M. F. I., Canada.—Will any of the readers of *The Metal Worker* inform me if there is any automatic device for regulating hot air dampers from the ground floor? If so, where is the device made?

High Pressure Water Heating.

From C. C. S., Woodbury, N. J.—Please inform me what is meant by high pressure water heating and what is meant by low pressure hot water heating.

Answer.—On all hot water heating systems an expansion tank is located at some point to receive the excess of water in the heating plant due to expansion when it is heated. In low pressure heating this expansion tank is open to the atmosphere, and no attempt is made to confine the water under pressure. In high pressure heating the expansion tank is hermetically sealed, leaving a space equal to one-twelfth of the bulk of water in the system for air in the tank above the water line in the system when the water is cold. When the water expands the air acts as a cushion and the pressure is proportional to the amount of space left in the air chamber, a small air space resulting in a high pressure and the pressure being reduced as the air space is enlarged. On such system a safety valve is always placed on the expansion tank at the top of the air chamber to permit the escape of air or water after the pressure has reached a given point. Some experience and skill is required in adjusting the pressure hot water heating system correctly,

and the use of such systems is very small compared to what is known as open tank or low pressure system. In case of the safety valve being weighted too heavily or becoming stuck to the seat, higher pressure is liable to be developed in the system than was intended, and in some cases the system has burst with considerable force and damage. On the liberation of water heated to a temperature considerably above 212°, owing to the pressure the water immediately turns into steam. Experienced men prefer the open tank or low pressure heating.

Radiating and Heating Surfaces.

From F. F. G., Belvidere, Ill.—How many square feet of radiating surface will 1 square foot of heating surface supply?

Answer.—The following extract from Baldwin's "Steam Heating for Buildings" indicates the difficulty of answering the question exactly: "There is no simple relation between the heating surfaces of boilers and the radiating surfaces of the buildings they have to supply the steam to, for the following considerations apply to every type of boiler: The method of setting, what the grate surface is, the character of the work they are designed for, and whether the air is simply to be maintained at a certain temperature, as in direct radiation, or whether every cubic foot of air which comes in contact with the radiator must be warmed from the outside temperature, as in indirect radiation, or whether the apparatus is direct-indirect or composite, all of which would have to be considered, and the results would then only be approximate; for even then, neglect of cleaning, a certain amount of neglect of management, and the state of the fire—whether on the first hour of the new fire, or the last hour of the dirty fire, for the time they are to run, must enter into this calculation.

"If the effect of the cooling produced by loss through the glass and walls of a building can be estimated and added to the amount of heat lost in warming the air admitted for ventilation, a close estimate can be made of the smallest grate which would burn fuel enough to evaporate the amount of water in a boiler sufficiently large; but the following points the constructor must never lose sight of in estimating for an automatically fitted boiler—namely, that it is the amount of opening in the draft door which regulates the fuel burned; next, the fuel burned regulates the water evaporated; and, finally, the water evaporated regulates the heat—both the heat of the room (by having a sufficiently large heater) and the heat (or pressure) necessary to move the diaphragm—which regulates the draft, so that really what is required are certain limits within which he knows he is

safe and to exceed which would be an unnecessary expense.

"Boilers for very large buildings, which have an engineer in charge, may be figured pretty closely; as he is supposed to be constantly at his post, and to clean his boiler fires regularly, and to fire often, and in small quantities, keeping his fire door open the shortest time possible, and further, to clean the tubes or flues whenever required. But this is not the case in house boilers. They must run for long periods without cleaning or inspection, and be adequate to every contingency of change within their limit of time to keep steam. It has been found by experiment in a general way, and from practice, that for ordinary buildings with average window surface and for the greatest range of temperature in our Northern States, when nothing but direct radiation with no ventilation is used, 1 square foot of boiler surface to 10 square feet of radiating surface will answer; assuming the radiating surface is ample. For indirect radiation, if the heating or radiating surfaces of the coils are figured double what they would be for direct radiation without ventilation, the same proportion of boiler to coil will suffice; but if, instead of doubling, the same surface be used or a slight increase, as one-fourth or one-third, and the building be kept warm by moving the air faster through a small coil, we must proportion the boiler the same as if we did double—that is, allow 1 square foot of boiler surface to 5 square feet of coil surface, the same as figured for direct radiation, bearing in mind, a boiler is proportioned to the cooling which goes on—heating, ventilating, &c.—and not to the coil surface, unless the coil surface is known to be ample for the conditions of temperature, &c.

"When the air is forced (as with a fan) more heat can be taken from a coil in the same time than when the air moves naturally from a difference in temperature, but as the heat necessary for the building remains the same the boiler must be proportioned to the building, and when the proper coil surface has been found sufficient to maintain the heat for the range in temperature incidental to the climate and local conditions, it establishes the simplest data from which to calculate the boiler. For direct-indirect radiation, proportion the boiler one and one-half times greater than it would be for direct radiation. These estimates are for boilers with ordinary high combustion, such as horizontal boilers, which are kept clean without interruption, but for house boilers (wrought iron shell), with slower combustion, an addition of from one-eighth to one-fourth may be used, and in small water tube boilers (pipe boilers) one-fourth to one-half may be added, in the judgment of the fitter."

The following extract is from Hood, on "Warning Buildings by Hot Water:"
"It is obvious that the extent of surface

which a boiler ought to expose to the fire should be proportional to the quantity of pipe that is required to be heated by it, and it is not difficult to estimate these relative proportions with sufficient accuracy, notwithstanding the various circumstances which modify the effect. It has been proved by experiments that 4 square feet of surface of an iron boiler will evaporate 1 cubic foot of water per hour, when exposed to the direct action of a tolerably strong fire. This, however, requires free exposure to the radiant heat of the fire; for the heat communicated to the flue surfaces is only equal to one-third of that which is derived by the direct action of the fire acting upon the bottom or sides of the boiler. And it can be ascertained by calculation that the same extent of heating surface which will evaporate 1 cubic foot of water per hour from the mean temperature of 52°, will be sufficient to supply the requisite heat to 232 feet of pipe 4 inches in diameter when the temperature of this pipe is to be kept at 140° above that of the surrounding air. From this, then, it appears that 1 square foot of boiler surface exposed to the direct action of the fire, or 3 square feet of flue surface, will be sufficient in a hot water apparatus to supply the necessary heat to about 53 superficial feet of pipe, or in round numbers, the proportion may be stated as 1 foot of boiler to 50 feet of pipe. As this, however, is almost the maximum quantity of pipe which can be heated, or, in other words, the maximum effect which can be produced without mechanical means of producing draft, it is very desirable in all cases to allow an increased surface of the boiler, bearing in mind that not only will economy of fuel be thereby produced, but the apparatus will be much easier managed and thus become more effectual and certain in operation.

"A small apparatus ought always to have more surface of boiler, in proportion to the length of pipe, than a larger one; as the fire is less intense, and burns to less advantage in a small than in a larger furnace. The effect also depends greatly upon the quality of the coal, the height of the chimney, the rapidity of draft, the construction of the furnace, and many other particulars; and it will always be found more economical, as regards the consumption of fuel, to work with a larger surface of boiler at a moderate heat, than to keep the boiler at its maximum temperature. A useful formula for calculating the effect of boilers and furnaces in most common cases is as follows: One square foot of boiler surface exposed to the direct action of the fire will boil 11 gallons of water from 52° to 212° F. per hour; or, in other words, it will add 160° of heat to 11 gallons of water. Or the same surface will evaporate 1½ gallons of water per hour. The area of the furnace bars should be about one-sixth that of the boiler surface."

Question of Gas Pressure.

From G. W. FERRIS, *South Manchester, Conn.*—In *The Metal Worker* of February 2 I notice the item from "G. E. S.," Pennsylvania, complaining of trouble with gas pipe in cold weather. The same trouble was experienced here with a 6-inch pipe which crossed a bridge about 6 feet below the line of the bridge floor. In very cold weather the pressure was greatly diminished, so much so that my gas stove in the shop would not work properly. This year the company have covered the pipe and I think they use a cow hair composition, and notwithstanding the recent severe weather we have had no trouble this year.

Inside Cold Air Duct.

From EREC, *Spencer, Ill.*—B. Røse, Odessa, seems to be a good writer on tinner's matters, and the writer would like him to give his experience on the use of inside air ducts—I mean taking air from the halls to supply a furnace with cold air. Should the inside cold air duct be equal to the area of the heating pipes, or should the accustomed three-fourths of the outlet be used for the supply pipe in such cases? Does it make any difference whether the air duct is run down close alongside of the furnace or should it be run underground a considerable distance before reaching the furnace? In a word, what is the best known plan to follow in using a cold air supply from hall?

What Is a Vacuum?

From P. J. R., *Connecticut*.—Noticing the very many valuable explanations you have given in the Letter Box, I would like to have you help me by giving an explanation of the word "vacuum." I know that siphonage results from a vacuum or partial vacuum being formed in the waste pipe beyond the trap, and that every time a fixture is emptied there is a certain amount of air displaced which must find its way out of the pipe through either the vent or, if not vented, through the weak seal of the other traps on the line, and I have noticed that on a long line of waste pipe there seems to be a strong suction after a fixture has been emptied which will cause the water to be drawn out of the trap when not relieved by a vent pipe, but still I am not able to explain what a vacuum is. I have an idea of what it is, but do not know how to express myself. Will you kindly inform me what the proper explanation of the word may be?

Answer.—A vacuum is merely a space where there is nothing. That is the dictionary definition, but as used in everyday talk and in reference to sanitary matters, it refers to a space from which the air has been exhausted to a greater or less degree. When this occurs in pipes there is a tendency for the water adjacent to this space to rush in and fill it on account of the pressure of the external air. Nature always endeavors to establish an equilibrium of pressure, and it is because of this law that we are able to make use of the suction pump, that device illustrating what a vacuum is and how its presence operates. In raising the plunger of a pump the air in the pump chamber is

exhausted and a vacuum formed, or, strictly speaking, a partial vacuum. The result is that the normal air pressure on the water forces it up to fill this chamber and so establish equilibrium. A repetition of this process enables us to raise water. An absolute vacuum is a space from which the air has been completely exhausted or expelled. A partial vacuum means that the air has only been partly exhausted, and the result is that the pressure there is lessened to a greater or less degree. In an absolute vacuum the pressure gauge would fall $14\frac{7}{8}$ pounds, as compared with the record in the atmosphere.

A Peculiar Furnace Experience.

From E. E. PALMER, Harrisburg.—In *The Metal Worker* of the 9th I noticed an article "A Peculiar Furnace Experience," and became interested in it and also your reply. Please allow me to offer the following as cause for the "peculiar experience." The room from which the attempt is made to draw cold air to the furnace is already supplied with means for the escape of the air in the room, and more besides, and it is the strong draft in the fire place flue that causes the cold air pipe to have the contrary movement of air in it. The amount of air carried out of the room through this flue is probably in excess of the amount delivered through the warm air register, and the cold air pipe is simply acting as a supply pipe which allows enough air to come into the room to supply the demand of the fire place flue. The cold air currents which were objectionable might have been caused in one of two ways. The fire place acting as a ventilator for the whole house drew all the cold air on the floors toward it, or, if the room was kept closed during cold weather, the warm air register could not deliver air enough to supply the fire place flue, consequently every crack and crevice around doors and windows admitted air, which, entering the room, would be drawn directly to the fire place flue and cause cold currents on the floor of the room. I believe the fire place to be the cause of the back action in this case, and while it is admitted that the fire place is a good ventilator, many times they ventilate too much, and it becomes necessary to partly close them up with summer pieces or in some other way so that the outlet will not be so great. The opening to many of them is from 3 to $3\frac{1}{2}$ feet above the floor, and I have known of cases where it was impossible to warm a room until the opening had been reduced and the cold air drawn off at the floor.

From R. S., Brooklyn.—I notice the letter from "C. S.," Cleveland, Ohio, in *The Metal Worker* of March 9. If "C. S.," and all other furnacemen would imagine a house was submerged in water they would have less trouble in solving their heating problems. The pressure throughout all parts is equal until the heat is applied by the furnace, which makes the air lighter. There is an unlimited supply of cold air to enter the furnace, and when the air is heated it will rise. When an exhaust pipe is taken from a room to the base of the heater a circulation should

follow unless the heat makes it escape through some other channel. In the case reported there seems to have been no circulation of air, but an ample supply of air forces heated air up what should be the return pipe of the circulating system. This shows that there is a faucet open on the system somewhere, and until this faucet is closed circulation will not exist. I will suggest to him to hunt for this faucet and close it. If the fire place shown on his sketch is open in all probability he will find that it is the faucet.

Collapsed With a Vacuum Valve.

From M. A. C., Petoskey, Mich.—Recently we had a 30 gallon copper boiler collapse, and are at a loss to know what caused it. The boiler was connected with a range in the usual manner. On top of the boiler in the supply pipe was a $\frac{3}{4}$ inch vacuum valve, the supply pipe continuing down into the boiler with a hole in the delivery pipe near the top. We get our water supply from a reservoir located on a hill. The water is pumped through the mains to the reservoir, and at the pumping station there is a pressure of 120 pounds. When the water becomes dirty they close the valve near the reservoir and open one near the pumping station, drawing all the water out of the main. The boiler collapsed while drawing the water out of the main. The vacuum valve was in good condition when I examined it soon after the boiler collapsed, and was not stuck fast with sediment. There is about 40 pounds pressure on the boiler when in use, and the water is carried direct from the main to the boiler. I should like to know what caused the collapse and what will prevent it in the future.

Note.—If the vacuum valve was loose and in working order, it probably became so through the jar and shock of the collapse. Had it opened when the tendency toward a vacuum occurred, air would have rushed in and the collapse would have been prevented. If our readers can give any light on this subject we shall be glad to hear from them.

Paste for Asbestos Paper.

From W. H., Indiana, Pa.—In *The Metal Worker* of March 2 I see an inquiry from J. Callahan & Sons of Cleveland, who want a paste for putting asbestos paper on hot air pipes. If he takes his paper and soaks it with water and puts it on the pipes with plenty of lap, it will stay there. It also can be put on steam pipes in this way with excellent results.

From J. R. L., Binghamton, N. Y.—In reply to the inquiry in *The Metal Worker* of March 2 respecting paste for asbestos, would say that I have found the best method to stick asbestos on heater pipes is to lay the paper on flat and rub with the hand until a paste is formed of the asbestos. I found that simply wetting did not make it stick sufficiently.

Wants to Stop a Gas Leak.

From J. M., Greenville, Ind.—Is there any known way of stopping a line of gas pipe from leaking which is inclosed in a partition and under floor without taking it out?

A Question in Furnace Construction.

From CONTACTOR, United States.—I don't mind opening up on "Contention," having read his letter in *The Metal Worker* of February 23. In the first place he is wrong, like the whole furnace trade, in calling the upper section of his furnace a radiator, because air does not heat appreciably by radiation. If it did not radiate any more than an iceberg, but still kept hot, it would snare just as good a purpose in a furnace. Air is heated by being brought into contact with a hot surface, and then passes along and heats other cool air by mixing with it. Consequently, a more sensible name for the internals of a furnace would be "Contactor." Now, the United States having got into contact with Canada, I will proceed with the contention. As air is heated by contact I am strongly in favor of a space between the fire pot and the contactor. If the contactor is cast as a part of the ash pit air cannot pass up on the inner side, hence that surface of the contactor is lost, and also that of the fire pot. If the space between the contactor and the casing is too great the air current passing will not be heated on its outer side. I was talking only yesterday with a bright and successful furnaceman who sets furnaces in three States, and he incidentally remarked that he had used all kinds of furnaces, but got the best results from a style he pointed out. It had a cast iron central dome surrounded by a circular steel contactor. He calculated that he got a large amount of hot air from the space inside of the contactor. Take a 40 inch casing and put a 32 inch solid top contactor in it, and the area of the air space will be about 450 inches. Now make the contactor of the two-cylinder type, making the inner cylinder 24 inches in diameter surrounding an 18 inch dome. They will make first class heating surfaces and the construction will give an air space of 200 inches in area. The air from this space will be hotter than the other air and will increase the capacity of the furnace at least one-third. Have an air space by all means, "Contention," and arrange your contactors to make them available. If you want your contactor to be a radiator, arrange a circular sheet iron contactor to surround it. This contactor should reach from the middle of the fire pot to the top of the radiator-contactor, then by absorbing radiant heat and being hot on both sides it will split the air currents, and doing double duty as a secondary contactor it will prove almost as efficient as a primary contactor.

Which is the Best for Furnace Tops?

From T. O. M., Adams, N. Y.—Replying to the inquiry of "J. C.," Cleveland, that appeared in *The Metal Worker* of March 2, would say that I think he will be obliged to look somewhere else for the difficulty with his furnace work. Taking the hot air pipes from the top of the hood is considered good form in this cold country where there is room to do so and still give the pipes free pitch from the furnace to the registers. Let him take a good, thorough look all around and see if he does not find some other cause for the trouble. Especially let him see if there is any way of taking the cold air out of the rooms into which he wishes to introduce hot air.

STEAM AND HOT WATER.

The Steam Fitters' Convention.

A letter has been received by *The Metal Worker* from J. Leland Wells, chairman of the Executive Committee of the Master Steam and Hot Water Fitters' Association of the United States, stating that the seventh annual convention of the association will be held in Philadelphia on June 13, 14 and 15. This is the same week that the National Association of Master Plumbers hold their convention, and is to enable those who are interested in both associations to attend both conventions.

The Carton Boilers.

The Carton Furnace Company, Utica, N. Y., have brought out a line of Carton safety sectional steam and hot water boilers which the trade will be interested in reading about. The illustrations presented herewith show very completely the construction of the Carton steam boiler. The hot water boiler is of the same general appearance without the steam trimmings; the description, therefore, will suffice for both. In designing the apparatus it was made so that the products of combustion would, it is claimed, impinge positively upon over 90 per cent. of the surface, nearly all the surface being horizontal, while

tion at any pressure. Fig. 1 shows the Carton steam boiler with side cut away, revealing the flue arrangement and

box, which give easy access to the smoke flues, so as to permit their thorough cleaning from the front of the

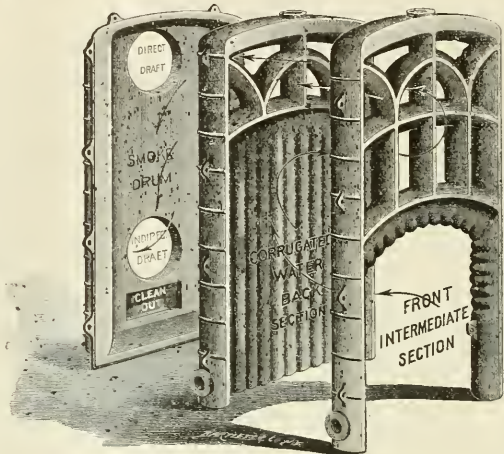
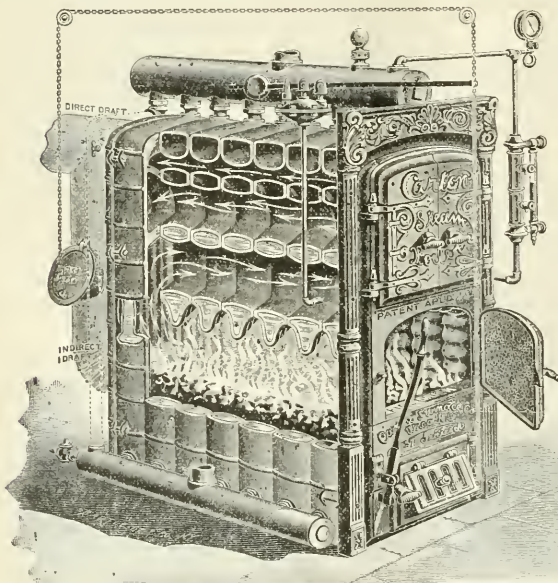


Fig. 2.—View of Sections.

showing the course of the products of combustion. The boiler is made in portable form and can be set in brick if

boiler. In Fig. 2 is shown an intermediate section, the water back section and smoke drum which forms the diverging flue. A recess is shown on the water back section, forming a flue through which the smoke and gases rise before traveling through the lower smoke ports to the front of the boiler, where they again rise and travel to the rear of the boiler through the top smoke ports, where the fuel products may be taken direct to the chimney through the upper smoke collar or carried to the bottom of the smoke drum through the return flue to the chimney. The cut shows the horizontal boiler surface and the double corrugations in the fire box and water back. Fig. 3 is a view of the intermediate section of the boiler, showing more clearly the water ways and water line, while Fig. 4 is a back section of the boiler. It is mentioned that the vertical curved water ways in the steam space directly above the water line act as relief ports and prevent any foaming of the boiler and allow the steam to pass off perfectly dry. In Fig. 5 is presented a view of the grate used in the Carton steam boiler. It is the Smyth duplex, and can be easily shaken and dumped. It is operated by a lever bar in front, and in case repairs are at any time necessary any grate bar can be removed through the feed door without disturbing the entire grate. The steam boilers are made in eight sizes, with fire chamber measuring from 15 x 20 inches to 57 x 20 inches, and adapted to heat with covered mains from 393 to 1264 square feet of direct radiation. The hot water boilers of similar size are adapted to supply with covered mains from 750 to 2500 square feet of direct radiation. Tables furnished by the Carton Furnace Company give likewise the rating of the



The Carton Boilers.—Fig. 1.—Broken View of Steam Boiler.

the circulation of water is vertical. Especial care was taken in arranging and proportioning the water and steam passages so as to assure perfect circula-

desired. All joints are screwed and are on the outside of the boiler, where they can be easily reached. Attention is directed to the large doors over the fire

Carton boilers for greenhouse and conservatory heating. William J. Baldwin, the well-known heating engineer, has made an exhaustive test of the boiler, and the report, which is as follows, will be read with interest in connection with the description:

The boiler was composed of a front, three vertical intermediate sections forming a fire box, and a back section. The sections were connected at their lower outside extremities by 2 inch lock nut nipples with return pipe headers, and at their top centers, in like manner, with a steam header. The grate area was 20 x 21 inches, and the grate was of a rocking pattern. The fire box is formed by a fire brick lined front. The three intermediate sections and one back section were corrugated in two directions, a large corrugation being formed in one direction, while across the large corrugation, in the other direction, was formed a smaller corrugation, the whole of which presented a large heating surface, in direct opposition to the fire. The general arrangement of the boiler provided for taking the products of combustion backward over the fire, thence upward and forward through one set of flues, and returning it again to the rear by a set of passages formed in the castings and above those already mentioned. As the boiler is intended as a house heating boiler, either as a steam or as a hot water boiler, and as it was more convenient to make the trials as a steam boiler, the boiler was set up to simulate actual conditions of low pressure steam heating. The boiler was connected with an ordinary chimney of about 35 feet in height, with natural draft and slow combustion. The trials were made at a steam pressure of 5 pounds, and cold water was fed into the boiler at a temperature of 52° F.

per pound of combustible—the ashes and clinkers having been weighed back—was 10.07 pounds of water from 52° F. to 5 pounds pressure of steam. The equivalent evaporation per pound of coal from water at 212° F. to 5 pounds pressure of steam is 10.2 pounds of water.

combustible burned per square foot of grate per hour was 4.76 pounds. The amount of water evaporated from 52° F. to 5 pounds steam pressure per square foot of average boiler surface per hour was 2.17 pounds. The equivalent evaporation of water from 212° F.

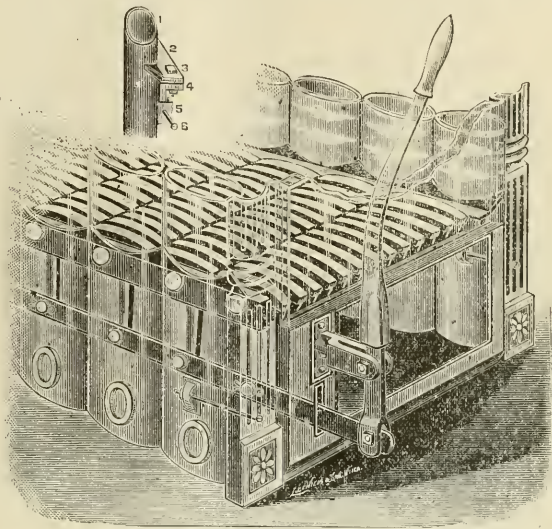


Fig. 5.—Grate.

The equivalent evaporation, therefore, from the temperature of the return water, in a gravity apparatus, to low pressure steam is approximately 10

to 5 pounds steam pressure, per square foot of average boiler surface per hour, is 2.368 pounds of water. Calorimeter tests of the quality of the steam were made from time to time which showed that the steam was practically at maximum density, or in other words, the steam was dry.

The rating of the No. 4 boiler above described and tested is 640 square feet of radiation for house heating by steam when the pressure is low (say 1 to 5 pounds). The above calculation of heating surface is based on the use of 5 pounds of coal per square foot of grate, and forms the maximum condition for a house heating boiler. You will note that when the rate of combustion is equal to 5 pounds of good anthracite coal per square foot of grate per hour 1 square foot of average boiler surface evaporated sufficient steam for 10 square feet average radiation, an exceedingly high efficiency and rarely obtained in practice. The low temperature at which the gases of combustion entered the chimney, ranging from 3° to 21° above the temperature of the steam, shows that the boiler utilizes about all the available heat of the fuel.

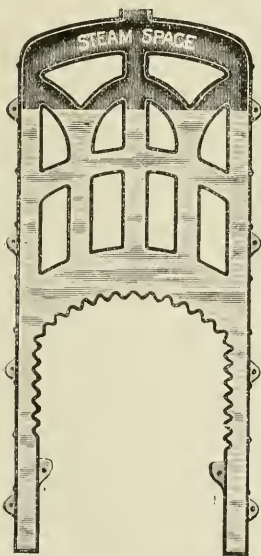


Fig. 3.—Intermediate Section.

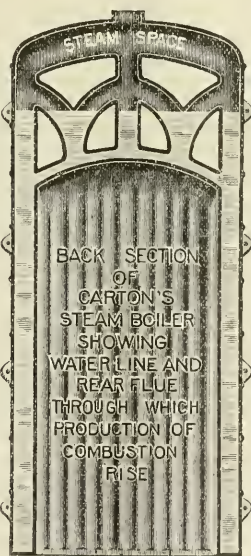


Fig. 4.—Back Section.

The temperature of the flue gases as they passed through a short smoke pipe ranged from 230° F. to 248° F. during the trials. The evaporation of water from 52° F. to 5 pounds pressure of steam was 9.32 pounds of water per pound of dry coal. The evaporation

pounds of water per pound of coal. The equivalent evaporation per pound of combustible from water at 212° F. to 5 pounds pressure of steam is 11.02 pounds of water. The amount of coal burned per square foot of grate per hour was 5.14 pounds. The amount of

THE HAYDENVILLE MFG COMPANY, 73 Beekman street, New York, have issued a compactly arranged catalogue of 372 pages, devoted to Brass and Iron Valves and Cocks for steam, gas, water, oil and chemicals; also Engine, Pump and Ship Builders' and Machinists' Supplies and Tools and Plumbers' Material. Among the goods of which the company make a specialty, under the common name of Haydenville, are included Finished Lavatory Valves, Gas Log Valves, Needle Valves, Disk Globe Valves extra heavy, Quick Opening Hot Water Radiator Valves, Fire Hose Valves, Double Gate Valves, Throttle Valves, Packed Plug Steam Cock and Bayonet Top Oil

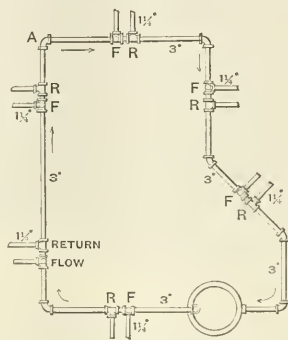
Cups. In addition to the foregoing a specialty is also made of Steam Pressure Regulators, Elevator Regulating Valves, Vanwie's Swing Check Valves; Engine, Globe and Angle Valves and Cushman's Steam and Water Vaporizers. The catalogue is miniature in size, measuring about 4 x 6 inches, and is fully illustrated, with prices.

A Circuit Hot Water Job.

From L. E. St. Louis.—Knowing that all the editor of *The Metal Worker* has to do is to answer the questions that are put to him these hard times and dull days, and having nothing to do myself, I ask a few questions, just to keep the editor busy and also, perhaps, gain some information. I wish to know what rule is used to calculate the number of feet of radiation that different sizes of pipe will carry in hot water systems. If there is no rule please state how many feet of radiation in ordinary house heating can be carried by 1, 1½, 2, 2½ and 3 inch pipes. In all of the shops in which I have worked different ways of figuring are used and every "boss" claims to know it all and that the other fellow does not know what he is talking about. I am looking over a set of plans this evening in which the architect specifies a single 3 inch circuit main to be used for both flow and return. The flow pipes to the radiators are to be taken from the top of the main and the return pipes to be connected at the side of the main, thereby forming two currents of water in pipe. The architect says (and of course he knows it all) that he has one heating plant of this kind in operation at St. Louis giving perfect satisfaction. There will be 745 square feet of radiation in the plant, and what is a mystery to me is how two currents of water can be formed in one pipe. I have an idea that it is done in the same way that two trains moving in opposite directions pass on a single track. I would like to hear from some of the practical hot water readers upon this subject. The sketch shows the heating plant, which is to be put in on the one-pipe system with the highest point in the circuit main at A.

Note.—In *The Metal Worker*, October 20, 1894, a circuit system of hot water piping was shown in a combination plant, and on March 2, 1895, the lecture on hot water heating by James Mackay gives information on running circuit mains and the capacity of pipes to carry radiation. Sometimes the area of a 1-inch pipe is considered sufficient for 100 feet of radiation, but under low temperatures of water and long runs or exposed pipe, an area of 1 square inch is better and seems to have been used in determining the size of the circuit main in the plant mentioned. All rules in reference to heating increase in value with the excellence of the judgment with which they are applied, hence the sizes of pipes mentioned will carry the following approximate radiation: A 1-inch pipe, 75 feet; 1½-inch pipe, 150 feet; 2-inch pipe, 225 feet; 2½ inch pipe, 350 feet; 3 inch pipe, 475 feet, and a 3 inch pipe 750 feet. With the increase in diameter of a pipe there is a decrease in the surface to lose heat in proportion to the bulk of water carried, so that many fitters use more radiation

than is given above. In reference to the plan submitted it is quite probable that the architect has employed some expert heating man to make the plan and specification, as that is a growing custom, and it is possible that as the architect has confidence in his advice he will insist on the letter of the specification and consequently is hardly open to criticism. In the opinion of some successful men it would be wrong to make the high point in the circuit main at A. It should be highest at the boiler and have a fall throughout its entire length until it returns to the boiler of 1 inch in 8 feet, then at the boiler it may drop down and connect at the bottom. In circuit mains the size should be ample—that is, one size



A Circuit Hot Water Job.

larger than would be used on a two-pipe system—in order that the supply of hot water be sufficient to reach the farthest radiator without being greatly chilled by the return water from the intervening radiators. There will never be two currents of water in the pipe if properly run, as the cooler water will fall to the boiler and the hotter water will continue to lose heat and fall as soon as it leaves the high point at the boiler. There may be a sufficient difference in the temperature of the water in the pipe to show very plainly, and it is possible that the colder water will fall or flow freely toward the boiler. Under some conditions it might be possible for the colder water to hold the hotter water in check before reaching some radiator, and by this means interfere with the radiator being heated. The opinions and criticisms of our readers have been invited by our correspondent.

ON WEDNESDAY MORNING a fire broke out in the building of Gillis & Geoghegan, 33 and 35 South Fifth avenue, New York, which entirely destroyed the building and their stock and tools as manufacturing and contracting steam fitters. Their loss is reported to be \$75,000, on which there is insurance to the amount of \$66,000. Nikola Tesla, the electrician, occupied the fourth story of the building as an experimental laboratory. The cause of the fire has not been traced.

HEATING NOTES.

THE EATON, COLE & BURNHAM COMPANY, manufacturers of Water, Steam and Gas Fittings, now at 61 Beekman street, New York, are about to move into the Postal Telegraph Building, at Broadway and Murray street. They will have a commodious suite of offices on the fourth floor overlooking Broadway. The secretary, Wm. H. Douglas, in alluding to the new departure said it might be thought to require some courage to do this, but they had found their goods were more and more going into the Hardware trade and this would put them in Hardware territory. This location is a very convenient one, and the company will be in possession of more room than was obtainable in their present quarters.

A DEFECT in the heating apparatus in the Universalist church, says a Watertown local paper, lowered the temperature below 45° Sunday morning, and it was very cold in the building. Rev. Libbey humorously insinuated that he was a staunch Universalist, but that a little fire wouldn't go bad at all just at that time.

THE H B SMITH COMPANY, 133-137 Centre street, New York, favor us with pocket maps of the States of New York and New Jersey. The front cover proclaims the company manufacturers of steam and hot water heating apparatus for warming all classes of buildings. The back cover shows a cut of their popular Cottage boiler and a list of their boilers, the Mercer, Gold, Mills and Cottage, also their radiators, the Union, Royal Union, Imperial Union, Champion Union, Reed and Whittier direct radiators and the Gold indirect pin radiator. If the maps showed the location of their goods throughout these States, the towns, rivers and railroads would be lost to view.

THE ACME BOILER & RADIATOR COMPANY of St. Paul, Minn., have filed a certificate of amended articles, changing the name of the corporation to the Universal Heating Company.

A LONDON, ENGLAND, EXCHANGE says: "The Lyceum was the first theater in the world to be lit by gas. This was in 1803; but as the audience complained of the odor it was soon discontinued. Now the Vaudeville Theater has won the place of honor as being the first place of entertainment in England to be heated throughout by electricity."

THE AMERICAN BOILER COMPANY will be represented in the State of Iowa by E. C. Molby, who takes the place formerly occupied by J. T. Ryan.

AT A MEETING of the Board of Managers of the American Society of Heating and Ventilating Engineers held last Monday, B. F. Slangland was appointed chairman of a committee to secure designs for a badge for the society. It was also decided that the board would hold regular meetings at 2 o'clock in the afternoon on the first Monday of each month. A regular date for these meetings was set, so that those who have business which they would like brought before the society may forward their communications to P. O. Box 1818, New York City, prior to that date.

SERRILL & SCIENCE, 39 Cortlandt street, New York, agents for the Webster exhaust feed water heater, are equipping the paper mill of F. S. Field & Co. of Boonton, N. J., with a large size Webster vacuum feed water heater. This will be connected with the dryers.

some of which are 4 feet in diameter and 8 feet in length, steam being admitted to the dryer through the journals on one side and the condensation being exhausted through the journal on the opposite side. It is said that with their system sufficient vacuum is formed to lift the water from the bottom of the dryer through a pipe which reaches nearly to the bottom to withdraw nearly all the water from the dryer. In the past it has been the custom to stop the machinery as frequently as it became necessary, and bleed the dryers of the water which had accumulated by means of a cock. A very material saving is said to be effected by returning this condensation to a hot well, from which it is pumped to the boiler.

CHAS. GORTON of the Gorton & Lidgerwood Company, 96 Liberty street, New York, recently returned from a trip among the steam and hot water heating trade in New England, and reports that the Gorton boiler, both for steam and hot water, has acquitted itself to the satisfaction of all users during the recent cold spell.

HIGGINS & Co, 379 Lexington avenue, New York, are distributing among their patrons a small mirror, on the back of which is their address and the Richmond trademark in blue, and the words "Victor steam and hot water heaters" around the outer edge in white letters on a red ground.

EDWARD GURNEY of the Gurney Hot Water Heater Company, Toronto, Can., was a visitor last week at the office of Johnson & Co., 71 John street, New York, who are agents for the Gurney steam and hot water heaters in New York.

ON FEBRUARY 18 P. K. Dealy gave "a plain talk" before the Chicago Steam Fitters' Protective Association on the Williams vacuum system of steam heating. This system is an arrangement of apparatus for drawing the steam and condensation from the piping by suction instead of forcing the circulation by pressure. Exhaust steam is utilized without back pressure on the engine, so that the cost of both power and heat is said to be no greater than the cost of power alone; and when used with appliances in which live steam only is available for heating at high pressure, it is said to be almost equally valuable. It is claimed that with this system better heating has been had with a pressure of 24 pounds at the boiler than has been previously secured from the same piping under a pressure of 80 pounds.

THE NIAGARA RADIATOR COMPANY of Buffalo, N. Y., are distributing very artistic hangers, illustrating the Niagara radiator. The hanger is composed of heavy cardboard, eyeleted at the top for hanging on the wall. The company are also issuing cards giving all dimensions of the various sizes they manufacture. Their radiating surface is rated as follows: 38 inches high, 7 square feet per loop; 32 inches, 6 square feet; 27 inches, 5 square feet; 21 inches, 4 square feet.

JAMES A. HARDING, whose address is Vineyard Haven, Mass., has severed his connection with the Paul Steam System Company of Boston.

According to an estimate based on actual traffic returns, the *Railway Age* computes that the railroads of the United States paid in wages and other operating expenses \$100,000,000 less in 1894 than they did in the previous year.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

THE CHARLES H. SIMMONS COMPANY, 72 Market street, Chicago, are to install steam heating plants in the store building of Heywood & Morrill, 272 Wabash avenue, and in the flat building of Perley Hale, 6833 Prairie avenue.

COOK & CHICK, 253 and 255 Kinzie street, Chicago, have the contract for steam heating in the flat building of Dr. Peter Fahrney, 938 and 940 Park avenue.

DURING FEBRUARY the hot water and steam heaters made by the J. H. McLain Company of Canton, Ohio, whose Chicago office is at 58 Dearborn street, were installed in the following buildings in Chicago alone: Two heaters, Newburs Building, 431 East Forty-sixth street; residence J. H. Neill, 4225 Drexel Boulevard; residence W. H. Mahnk, 4227 Calumet avenue; residence John Ott, 630 North Roby street; two heaters residence Jos. Cormac, 680 Ione place; residence S. Mayer, Drexel Boulevard and Forty-third street; residence M. Blocki, Forty-third street; residence S. H. Rosenthal, Indiana avenue; two heaters residence Geo. A. McClelland, Kenilworth; residence Dr. Matteson, 4934 Vincennes avenue. In addition to these they report sold but not yet delivered six Cambridge steam heaters for the flats erected by W. H. Sear at Sixty second street and Calumet avenue, and steam heaters for the new and handsome Partridge residence on the South Side. Country trade has been very good also with them. These sales do not include their business in their Oxford perfect blast furnace, which, all over the country, has exceeded their expectations for trade so early in the season.

IN GEORGE W. SCHLICHTING'S residence the heating and plumbing were done by Joseph Dugdale, Bridgeport, Conn. The former is known as the siphon hot water system, which works satisfactory. He also has the plumbing contract for Dr. E. T. Payne's new block and two stores and apartments.

H. C. HURLEY, representing the Buffalo Forge Company, Buffalo, N. Y., has completed the heating and ventilating plant in the Ninth Ward School at Rutland, Vt.

A. W. HUNTER, North Adams, Mass., is putting hot water heating apparatus into Dr. W. E. Brown & Son's new sanatorium. Two Perfect boilers are used and there will be 131 radiators in the building.

FREDERICK SCHOLEFIELD, 310 South California avenue, Chicago, is to do the plumbing and drainage in the flat building of E. W. Schan, 1281 Bonney avenue.

PAUL H. JAESCHKE, 72 Centre street, Chicago, has the contract for the plumbing and drainage in the residence of Paul and Albert Dennis, Warren avenue, near Crawford.

PORTER & KLEIN, 100 Thirty ninth street, Chicago, have the contract for the plumbing and drainage in the store building of E. Rice, Forty-seventh street, near Union.

ELLIOTT & RYAN, 272 Fifty-fifth street, Chicago, have the contract for the plumbing and drainage in the building of J. K. Flood, Madison avenue, near Sixty-second street.

BINDER BROS., 132 Lake street, Chicago, have the contract for the plumbing and drainage in the flat building of O. Forgerson, 269 North Robey street.

THE J. W. BROWN PLUMBING COMPANY, 364 Lincoln avenue, Chicago, are to do the plumbing and drainage work in the residence of C. A. Hull, Greenleaf and Grand avenues.

CHARLES C. BREYER, 187 West Division street, Chicago, is to do the plumbing and drainage in the four cottages of W. H. Giesecke, 901 to 907 Elk Grove avenue.

ALEXANDER M. MAYPOLE, 816 West Van Buren street, Chicago, has the contract for the plumbing and drainage in the flat building of J. D. Thompson, 1175 West Monroe street.

T. W. CORBETT, New Haven, Conn., has nearly completed the plumbing of the new Gay apartment building. There are 50 water closets, 46 porcelain lined bathtubs, all with exposed nickel fixtures. J. H. McCormack of Wallingford is putting in a McCormack steam boiler and the H. B. Smith Company's Gold radiators.

ARCHITECT JACKSON has awarded to the Barlow Bros. Company, Waterbury, Conn., the contract for plumbing the alterations to Peter Brooks' house.

THE VANDERMAN PLUMBING & HEATING COMPANY of Willimantic, Conn., have been awarded the contract for piping the new shoe factory at Colchester.

THE EQUATOR STEAM BOILER, made by the Nason Mfg. Company, 71 Beekman street, New York, will be used in heating a five story apartment house for A. Taylor, Brooklyn, and two apartment houses for the Estate of B. A. Ayerig, on Thirty-third street, New York.

MULHERN & PIATTI, 44 East Forty-second street, New York, are installing the heating plant in the fire engine house at White and Elm streets, New York, and in an office building at 89 and 91 Fifth avenue. They have recently completed the heating plant in a 12-story office building, 50 x 200 feet, at 627-629 Broadway. Horizontal tubular steam boilers were used in all of these buildings.

FARRELL & CONATON, Lowell, Mass., have been awarded the contract for plumbing in the insane department of the Almshouse.

THE BOARD OF EDUCATION, Kinsman, Ohio, is contemplating putting a new furnace in the school building in the near future.

A SPECIAL MEETING of the building committee of the Board of Education of St. Louis was held last week to consider the question of heating and ventilation for the new schools to be built this summer. Professor Kinealy's report was read with care by all the members, and, in consequence of it, the fan ventilating hot blast system of the Marquette will be adopted at the following schools at cost given: Columbia, \$6000; Charles, \$8000; Benton, \$6000; Riddick, \$6000; Dumas, \$8000; Nebraska avenue, \$4000. In making bids for this system the firm must guarantee 2000 cubic feet of fresh air per minute for each room. Parties must furnish their own plans and specifications. At the Washington and Ashland School additions it was decided to put in the direct and indirect steam system, as the boilers are still new and could amply supply heat and ventilation. The Green

Lea Place School, a four-room building, will temporarily be supplied with furnaces taken from other schools. The total expense for all heating apparatus will be \$44,000. Bids will be received until April 5.

WM. FAUST, Pittston, Pa., has the contract for the plumbing and gas fitting in the Lazarus Block.

McKEOUGH BROS., Utica, N. Y., have been awarded the contract for the plumbing in the McGarvey Building.

OTTO L. PETERSON, 217 West North avenue, Chicago, is to do the plumbing and drainage in the flat building of M. Olsson, 104 Potomac avenue.

ARNOLD BROTHERS, 507 South Western avenue, Chicago, have the contract for the plumbing and drainage in the flat building of J. Heperlee, 1456 Lexington avenue.

WILLIAM C. BLETSCH, 1216 Belmont avenue, Chicago, is to do the plumbing and drainage in the flat building of M. Crosby, 1535 and 1540 Sheridan street.

FRANK MEEK, 486 West Eighteenth street, Chicago, has the contract for the plumbing and drainage in the flat building of John Charvat, 769 Van Horn street.

ERNST GARNER, 174 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the flat building of H. Oleson, Sheridan avenue, near Cortland avenue.

J. ZIELINSKI, 1014 North Hoyne avenue, Chicago, is to do the plumbing and drainage in the flat building of J. Biese, 1048 Lincoln avenue.

THE ALCOCK PLUMBING COMPANY, 102 Twenty-second street, Chicago, have the contract for the plumbing and drainage in the Methodist Publishing House, 1517 North May street.

NELSON & CEDERHOLM, 87 West Ohio street, Chicago, are to do the plumbing and drainage in the residence of A. Larson, Berry avenue, near Jefferson street.

NOBLE & THUMM 290 Lincoln avenue, Chicago, have the contract for the plumbing and drainage in the residence of H. Orlikowsky, 202 Warren avenue.

GEORGE ECK, 2208 Archer avenue, Chicago, is to do the plumbing and drainage in the residence of J. W. Luse, 6742 Sherman street.

ALWIN W. BAHN, 393 Gross Park avenue, Chicago, has the contracts for the plumbing and drainage in the store building of Frederick Schmidt, Otto and Walcott streets, and in the store and flat building of Henry Riedmayer, Roscoe and Perry streets.

NELL BROTHERS, 495 Forty-third street, Chicago, are to do the plumbing and drainage in the flat building of Richard Kelly, 5928 La Salle street.

FREDERICK NEUSTADT, 300 North avenue, Chicago, has the contract for plumbing and drainage in the flat building of W. F. Brehm, 220 Seminary avenue.

PAUL H. JAESCHKE, 72 Centre street, Chicago, is to do the plumbing and drainage in his flat building at 516 Evergreen avenue.

RICHARD T. WARD, 1489 West Harrison street, Chicago, has the contract for the plumbing and drainage in the flat building of P. F. Doyle, 1480 same street.

PARK BROTHERS, 79 Dearborn street, Chicago, are to do the plumbing and

drainage in the flat building of John Jeffrey, 6214 and 6216 Greenwood avenue.

WELLS & MALLMAN, 134 Centre street, Chicago, have the contract for the plumbing and drainage in the flat building of C. S. Thornton, 7928 Honore street.

JOHN C. GUNDERMANN, 182 North avenue, Chicago, has the contract for the plumbing and drainage in the residence of E. Fischer, Ashland and Grace avenues.

THE BAKER & SMITH COMPANY, 193 to 197 Van Buren street, Chicago, are to install a steam heating plant for the four store and flat buildings of K. E. Roberts, Cottage Grove avenue, Thirty-first street and Rogelsby avenue. Four locomotive boilers and 600 radiators will be required.

THE CONTRACT for the heating plant for the new Baptist Church building, at Seventh and Fulton streets, Chester, Pa., has been awarded to Harry S. Riley, the West Third street plumber. The plant will cost about \$1500.

ALEXANDER WUERZ Noroton, Conn., has awarded the contract for plumbing and heating his new \$20,000 residence to Jos. Dugdale of South Norwalk.

D. H. KELLY, Derby, Conn., has nearly completed the plumbing and heating of the Plumb Library, in Shelton. A horizontal Bigelow boiler has been used.

ARCHITECTS BROWN & VON BEREN have a new two family house for Jos. Bowden, Jr., of Stamford. Each apartment will have five rooms, with hot water heat and all improvements, and the cost will be about \$6000.

THE EXETER MACHINE WORKS, 32 Oliver street, Boston, Mass., are furnishing Exeter boilers and radiators for the new post office at Lynn, Mass.

THE HIGH SCHOOL BUILDING at Amherst, Mass., is to have a system of heating and ventilation.

IN EXAMINING the City Hall at Detroit, Mich., which is to have a new \$6000 ventilating plant, it was found that a soil pipe had been tapped to carry off roof water where the fan drew sewer air through the opening.

EVANS, ALMIRALL & Co, 41 Day street, New York, are installing a heating plant for the Scovill Mfg. Company, Waterbury, Conn., using Evans' exhaust system of hot water heating.

S. G. RICHARDS, 1454 Broadway, Brooklyn, is installing a heating system in the Broadway Temple, Brooklyn. It will be the plenum system, using a Pride of Brooklyn steam boiler.

PROPOSALS for heating and ventilating Winthrop and Shores streets schools, at Taunton, Mass., will be received at the office of the city clerk until March 23.

JOSEPH C. J. WAINWRIGHT, Brighton, Mass., has been awarded the contract to furnish the heating and ventilating galvanized iron pipes to a large summer cottage, the Cartworld, at Bar Harbor, Maine. The plumbing will be done by Lum & Mitchell, Boston.

EVERETT J. WINN, Dedham, Mass., has secured the contract to do the plumbing at the new Avery school building in East Dedham.

BIDS for the plumbing in the new barracks being erected at Sackett's Harbor, N. Y., are asked for.

THE CONTRACT for the heating of the new Mooney and Brisbane Building, at

Buffalo, N. Y., has just been awarded to the L. H. Prentice Company of Chicago. The radiation is to be supplied by the American Radiator Company, about 15 carloads being required.

A STEAM HEATER is to be placed in the Almshouse at Wakefield, Mass.

HOLYOKE, MASS., will spend \$10,000 in ventilating school buildings.

The returns of the foreign trade of the Dominion of Canada for the six months ended December 31, 1894, show a shrinkage of \$6,322,000 in the value of imports, while native exports held their own satisfactorily. The figures are given as follows:

	1894.	1893.
Imports for last six months	\$54,572,375	\$60,894,062
Exports for last six months	72,599,132	77,604,390

The decline in imports was general in all branches, but a very few articles exhibiting any increase. As regards the falling off of about \$5,000,000 shown in the value of exports, the explanation is given that this is due entirely to a lessened shipment of American agricultural products sent through Canadian ports, the shrinkage in value of which was \$5,500,000. Home commodities exported show a slight increase, minerals and live stock giving the principal gain in this respect. Timber exports are the only ones that fell off to any extent, being \$1,600,000 less than in the last half of 1893. This decline is attributed to the dull condition of the United States market, as Great Britain bought \$2,000,000 worth more wood and timber than in the preceding period.

It is expected that the new Atlantic liner "St. Louis," now building for the International Navigation Company at Cramp's Ship Yard, Philadelphia, will be ready to make her maiden trip early in June. The "St. Paul" will follow her consort early in September. These two vessels will be operated on the main line between Southampton and New York in conjunction with the "New York" and "Paris." This will involve several changes in the arrangement of the International Navigation Company's passenger traffic, and only twin screw steamers will thenceforth be operated on the main line.

A certificate of incorporation has been filed in New York by the New York and Brooklyn Tunnel Company, with a capital stock of \$100,000. It is proposed to build a tunnel between East Sixteenth and Whitehall streets, New York City, along the most direct and feasible route under the bed of the East River to a point in Brooklyn between North Eighth street and Atlantic avenue. The length of the road to be built is estimated at about two miles. It is to be an underground railroad, standard gauge, and to be operated by electricity or other motive power. The directors of the company are: Thomas A. Patte-son, Jr.; Charles J. Schlegel, Walter J. Alma, John C. Bucken, Charles Kuehn-mund, John V. Bouvier, Jr., Frederick P. Delsfield, Frank H. Knight and Samuel S. Slater.

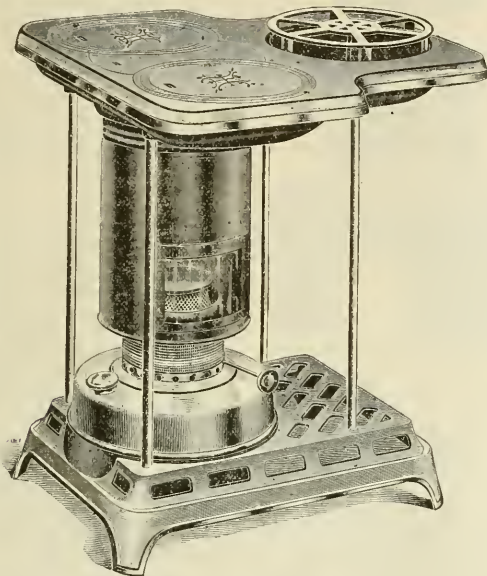
A project is on foot to utilize Glen Falls, in Ontonagon County, Mich., in developing electric power wherewith to operate a number of abandoned copper mines in the neighborhood. It is calculated that in the existing fall 4377 horse-power is available, and that it can be increased.

THE RETAIL STORE.

The Ladies' Delight Oil Cooker.

A recent addition to the assortment of oil cookers manufactured by Page Brothers and Co. of 227-233 Cam-

bridge street, Boston, Mass., is the new Ladies' Delight, an illustration of which is presented in the accompanying engraving. This is claimed to be something of a departure in the line of oil cook stoves and represents the results of many years' experiment. The manufacturers feel that in the Ladies' Delight they have the "neatest, most efficient, most compact and easily managed oil cook stove ever presented to the public." From an inspection of the engraving it will be seen that in the top surface there are three cooking holes, each being 8 inches in diameter. The rear one is intended for the reception of the oven, which is of large capacity, being 18 inches long, 14 inches high and 12 inches wide. The makers state that they use the same kind of burner and font as that employed in connection with their Beauty oil heater. Some of the special points claimed for the Ladies' Delight as now made include the following: 1. There is no drawing up of the flame and tendency to smoke. 2. No heating of the oil reservoir, producing what is termed "sweating of oil," necessitating constant care and wiping. 3. No generation of gas from heated oil and liability of explosion and catching fire. The heater here shown is known as No. 10, and the font has a capacity of 1 gallon of oil, which it is claimed will burn from 10 to 12 hours. The tubes



The Ladies' Delight Oil Cooker.

and font are of heavy seamless brass, and as the double central draft is embodied in the construction of the cooker, the font remains cool and perfectly safe. The oven used is especially adapted for the Ladies' Delight and is

Enterprise Raisin Seeder.

The Enterprise Mfg. Company of Philadelphia, Pa., for whom J. C. McCarty & Co., 97 Chambers street, New York, are agents, are introducing another labor saving device which they



Enterprise Raisin Seeder.

have named the Enterprise raisin seeder, shown in the accompanying engraving. The raisins, after stemming, are fed into the hopper, the revolving of the crank forcing the raisins between

a rubber roller and toothed cylinder, permitting the seeded raisins to drop into a receptacle while the seeds are discharged through a spout. It is said the ordinary washing usually given raisins is sufficient to insure better results than if the fruit is pressed through dry. The family size will seed, it is said, 1 pound of fruit in five minutes, a larger size for hotels, bakeries, &c., having a greater capacity. Both are tinned. The family size is numbered 36, that for hotels 33.

Crescent Automatic Spray and Force Pumps.

The Crescent Brass & Iron Works, Detroit, Mich., are putting on the market the spray and force pumps herewith illustrated. The one shown in Fig. 1 is described as a reservoir pump, with a heavy brass cylinder, an extra large galvanized iron air chamber, 4 x 11

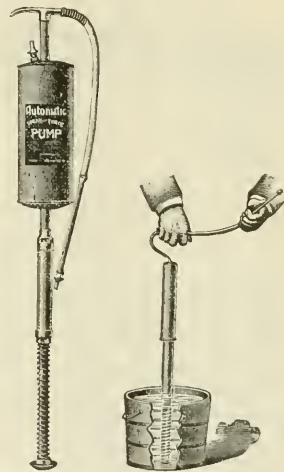


Fig. 1.—Pump No. 1. Fig. 2.—Pump No. 2.

Crescent Automatic Spray and Force Pump.

inches in size, and a galvanized iron suction rod. The spiral spring is referred to as being made of heavy spring brass wire, and the valves of non-corrosive metal. The saucer shaped foot has a strainer on the top to prevent clogging with dirt from the water. Two nozzles are furnished with each pump, in which a sprayer is adjusted; also 12 inches of good rubber tubing. It is explained that the reservoir may be filled and the pump carried "a-field," and that with the fine spray adjustment the liquid used will last from 10 to 15 minutes; or, if desired, the pump may be made to work as well from a pail. The pump shown in Fig. 2 is designed for bucket use only, but otherwise is similar to the No. 1. It has a galvanized air chamber 2 x 10 inches, a heavy brass cylinder, metal valves, brass

made with extra large side door and double shelves.

spiral spring and a saucer shaped anti-clogging foot. The length of the rubber tubing is 12 inches.

Ideal Water Filter.

The Germ Proof Filter Company, 16 Cedar street, New York, have brought out an improved water filter, as shown in the accompanying cuts. Fig. 1 represents the direct filter, known as the Cataract, which is $3\frac{1}{4} \times 3$ inches in size. The top is of cast brass, in one piece and nickeled, as are all the metal parts. Connecting the top and bottom is a perforated hollow metal pipe, which passes through a natural stone filter 2×2 inches in size with rounded edges. The top and bottom of the filtering block are made tight with rubber washers, thus compelling the water passing into the reservoir between the filter and heavy outer glass case to make its way through the filtering stone into the inner pipe and so out at the bottom. There is an inside thread cut in the circular rim forming part of the upper cap, by means of which the apparatus is screwed to the permanent faucet. Fig. 2 illustrates the same filter with

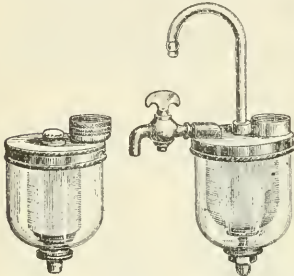


Fig. 1.—Direct Cataract Filter. Fig. 2.—Ideal Filter for Filtered or Unfiltered Water.

goose neck attachment and extra faucet. Filtered water is delivered through the goose neck, while unfiltered water passes more rapidly through the faucet seen in the cut. The filtered supply is controlled by the main faucet on the water fixture. The filters are quickly taken apart, when any accumulation of matter can be instantly brushed off the stone block. Underhill, Clinch & Co., 94 Chambers street, handle this article in New York and nearby territory.

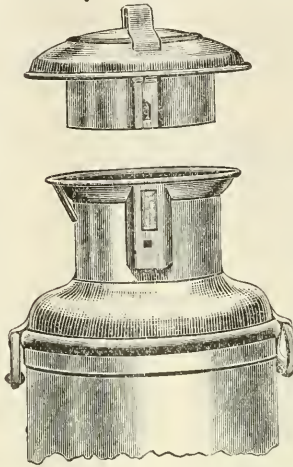
Air Tight Waste Trap.

The Baldwin Refrigerator Company, Burlington, Vt., use on their refrigerators a closed waste trap. It is in cup form, with a screw top, having a short pipe passing through the cover and down nearly to the bottom of the cup. This is slipped over the waste pipe of the refrigerator. Near the threads on the upper portion of the cup are openings through which the waste water drips. The trap is made in this form, it is explained, to prevent warm air ascending the drip pipe and to prevent water splashing the bottom of the refrigerator when doors are suddenly closed. The trap can be taken apart for cleaning, and is referred to by the manufacturers as simple and effective.

THE FRANCE SNYDER COMPANY have opened a new stove store at 523 Madison avenue, Covington, Ky. The concern are the successors to the late J. M. McClung, who was in business for many years in that city.

The Evans Protective Milk Can.

We show in the accompanying illustrations the special features of the Evans protective milk can put on the market by Keen & Hagerly, Baltimore, Md. Fig. 1 shows the body of the can with the top or cover detached, indicating the manner in which the cover is locked to the body. Before locking a small



The Evans Protective Milk Can.—Fig. 1.—View of Can with Top Removed.

card or seal on which the shipper writes his name is inserted in the lock, and in order to unfasten the top a nail or some sharp instrument must be inserted in the opening of the lock. Doing this breaks the seal and the receiver therefore by examining the seal before unlocking the can is enabled to see at once if the seal has been tampered with and by this means locate the trouble. The cover furthermore has a rubber gasket making it impossible to pour the milk out of the can by upsetting. The features of this lock will be more fully understood by referring to Fig. 2, which is an outline sketch of the lock itself. It is pointed out that the advantages of this device



Fig. 2.—Detailed View of Lock.

are that it prevents tampering with the contents and thus settles all disputes of measurement, quality, sediment or adulteration. It is simple, does not get out of order and requires no padlock or chain or extra key.

MEMORANDA.

FOOTE & SHEAR COMPANY, Scranton, Pa., have removed their wholesale hardware business from 513 Lackawanna avenue, where it was established 45 years ago, to 119 Washington avenue. They will occupy seven floors 25×155 feet in the new Carler & Kennedy Building, giving them more than 27,000 square feet of floor space. The building is fitted with all necessary fixtures and

appliances for the transacting of the large business which this firm enjoy. The capital stock of the company has been recently increased. They will continue the wholesale and retail hardware, plumbing, tinning and heating departments as heretofore, but with largely increased facilities.

MCLENNAN & McFEELEY, hardware merchants, have sold out their Victoria business and have concentrated their concern in Vancouver, B. C.

N. KLEIN of Richmond, Va., issues an announcement under recent date to the effect that on February 16 he admitted W. P. Klein to one-third interest in his business and appointed George Klein his attorney. The business will hereafter be conducted under the style and title of N. Klein & Son, who will assume all liabilities of and collect all outstanding bills due the old firm. The new concern are located at 620 East Broad street and carry a complete line of stoves, ranges, fire place heaters and house furnishing goods. They also give attention to tinning, plumbing and gas fitting.

LEFEVRE & Co. of Chillicothe, Ohio, have removed their store from the old stand to 32 East Second street, where their entire establishment is now on the ground floor. They make a specialty of mantels and grates, and handle a smoke consuming furnace made by the Otsego Furnace Company.

THE AVERY STAMPING COMPANY, Cleveland, Ohio, have been appointed Western agents for the full line of Housekeeping Hardware, Garden Tools, &c., manufactured by C. W. Dunlap & Co. They intimate that with the increased facilities of the manufacturers customers may rely upon the prompt and satisfactory filling of all orders, and state that all inquiries for catalogues, prices, &c., from trade located west of New York City should be addressed to the company at Cleveland.

J. W. GREEN, Canandaigua, N. Y., has bought out the interest of the Canandaigua Tinware Company of that place and will continue to manufacture the improved Queen Cooker and will likewise do general jobbing, plumbing and steam fitting.

THE RINGEN STOVE COMPANY, St. Louis, Mo., issue a neat catalogue relating to the Quick Comfort refrigerators, the merits of which they commend to the trade with perfect confidence. In the introductory pages they speak of the general construction and some of the details are illustrated and carefully described. The casters are shown in this way, likewise the trap. A broken view illustrates the circulation in the refrigerator; then follow the illustrations of the different kinds of hardwood refrigerators, covering some 17 pages. A number of grocers' and butchers' refrigerators are likewise illustrated and so are sideboard refrigerators and ice chests. Tables of sizes and prices are given with the illustrations.

Remarkings on the present condition of the anthracite coal trade, the Philadelphia Ledger says that the trade continues to show that the companies are practically disregarding all efforts at restriction and are mining about all the output their collieries can produce. They are now going on at a rate which will put upon the market for the current month at least 4,250,000 tons, instead of the allotment agreed upon of 3,500,000 tons.

ROOFING AND CORNICE.

A New Roofing Slate Association.

For some little time past the condition of affairs in the Bangor slate region has not been altogether satisfactory to leading operators, and a meeting was recently held for the purpose of correcting, if possible, some of the existing evils. A movement was instituted which has resulted in the formation of what is known as the Bangor Roofing Slate Manufacturers' Association, the object of which is to maintain a uniform scale of prices for genuine Bangor slate, and to sell direct to the trade, or through the hands of four dealers, namely: Auld & Conger of Cleveland, Ohio; John D. Emack of Philadelphia, and E. J. Johnson & Co. and John Galt & Sons of New York City. The association will issue a card to the salesmen so that the trade will know that no one offering Bangor slate is authorized so to do unless he can show authority direct from the association. The latter have also adopted a certificate which will be stamped with the official seal as a trademark, being signed by the inspector, and will be attached to every invoice that goes out, certifying that car No. is loaded with genuine Bangor roofing slate. The architects of the country will be furnished with a copy of this certificate, and if they will request or compel the party furnishing the slate to produce the certificate, the purchaser will know whether or not he is getting what is called for. This course of procedure has been taken by the association for the reason that Bangor slate is largely called for by architects and to prevent the substitution of inferior grades when Bangor is distinctly specified.

The next best grade of Bangor slate is what is known as the Albion Vein, at Pen Argyll, located 3 miles from Bangor, Pa. The manufacturers in this section have suffered largely by having inferior slates offered as their own, and it is believed that they will form an association similar to that at Bangor, adopting the same rule of sending out a certificate. The best element of the trade has requested some such action as this to be taken so that they can be assured that prices will remain firm and that all will pay the same price for their slate. In Bangor the formation of this association has taken away the petty jealousies and envy that have existed for some time between different manufacturers, and it is probable they will all act in harmony in the matter of lowering or advancing of prices. The manufacturers have adopted a price-list and have made it from 15 to 25 cents a square lower than last year's list. We understand that in the formation of the association mentioned there has been no effort at combination for the purpose of putting up prices, but simply for keeping them at such a level as will pay a reasonable profit and at the same time protect the name of the goods.

In connection with this matter the following, taken from the Bangor Observer of date of March 7, will prove interesting:

A meeting of all the slate manufact-

urers of the Bangor region, the Old Bangor Company excepted, was held last Thursday afternoon at the office of Thomas Ditchett. The outcome of the meeting is of great importance to the people of Bangor. For the past two months a bitter fight in prices has been in progress between the manufacturers, and slate was sold at ruinously low prices. Most of the slate region in the United States felt the bad effects of the strife. We are very glad to be able to state that the end of such a state of things has come. The meeting resulted in perfect harmony of action.

A list of prices was unanimously adopted, although much lower than the list that ruled so long, yet it was apparently satisfactory to all. The meeting had the assurance that the Old Bangor Company would heartily co-operate both in prices and also in the matter of issuing a certificate with each car of Bangor slate in order to protect the trade. This certificate will be issued from the general office of the manufacturers, signed by an inspector appointed for the purpose, whose particular duty will be to see that each shipment of slate shall be as stated in the certificate. The meeting adjourned with the best of feeling and of course every one was jubilant because of the final result. The companies were represented as follows:

American Bangor Slate Company, H. J. Reader, Conrad Miller, J. E. Long and C. S. Colbert.

Bangor Excelsior, R. S. Brown.
East Bangor Consolidated, S. C. Smith and William Bray.

North Bangor, D. F. More.
Star, Charles Ford and Richard Payne.

Auld & Conger, W. E. Lloyd.
East Bangor Slate Mining Company, S. L. Fidler and James Masters.

Columbia Bangor, Thomas Ditchett.

Sub-Letting in Building Contracts.

Architects and intending builders have recently been in receipt of a protest from the Metal Cornice Manufacturers' Association against letting the different parts of a building to one general contractor. The communication bears date at Chicago and reads as follows:

Believing that the practice of letting the entire work upon a building to one general contractor, the different parts of the work to be in turn sublet by him, instead of letting those different parts direct to the contractors who are actually engaged in the different trades, is detrimental to the general interests of the owners, architects and building contractors, and believing that the practice is increasing, because of the efforts of those engaged in general contracting, while on the other hand, up to the present time, no set of men have taken the trouble to systematically oppose it, we shall herein attempt to present the arguments against it. We will consider how the matter affects the owner, the architect and the contractors for the different trades.

1. As to the Owner.—We have never heard it claimed that an owner could get a better or cheaper building from a general contractor than he could by dealing di-

rectly with the different contractors, and we do not see why he should. Any one will work at least as cheap for the owner, who has the money, as for a contractor, who often has no capital of his own, and depends upon getting the money from the owner with which to pay his sub-contractors; the result frequently being disastrous to the sub-contractor, if, through having taken the work too low, or if, through mismanagement, he does not get enough to pay the expenses of his business and his sub-contractors' bills. If, on the other hand, the contractor does have capital invested, so that one can safely do work at low rates for him as for the owner, then some one must pay a profit on this capital, and that some one must be the owner, who may pay it directly in paying a higher price for his work, or indirectly by getting poorer or cheaper work than he had contracted for. It is good business policy to get rid of the middleman wherever possible, and the general contractor is surely one. It is certainly harder for the owner and more expensive for him to make changes on a building let to a general contractor than where the work is done directly by those engaged in the different trades, as on all changes the general contractor expects and demands his profit. To the owner again: Another and very material reason why work should be let in separate contracts, instead of in one general contract, is that the chances and the rewards to the general contractor of combination or pooling are so much greater that it is much more likely to be done. There are always more general contractors, so that it is comparatively easy for them to get together and arrange things, and the jobs taken as a whole are so large that it is worth while for them to try to make a combination, even if they cannot often succeed.

2. As to the Architects.—While we have never heard it claimed that by letting the work of a building to a general contractor the owner would get a better building, or that he would get one for less money, it is frequently asserted that work done in that way is less trouble to the architect and to the owner, and that it can be done in less time if it is let to one contractor rather than to several. When the first of the World's Fair buildings were figured, bids were taken for the entire building and for the several parts. The separate bids were in all cases the lowest, and the work was let and done that way. We have always supposed that those buildings were put up with unusual rapidity, which would seem to prove that to get work done rapidly it is not necessary to let the entire building to one contractor. That letting the work upon a building in separate contracts for the different branches is cheaper than letting it all in one, and that it need not result in slow work, is evidenced by the experience of the Board of Education of this city, who always divide their work, though they occasionally take figures the other way, but always find them higher than the separate bids. We could never see how a general contractor could get his work done any more quickly than an owner or an architect could. We could never see what magic there is in a contract made by a sub-contractor with a general contractor that makes it easier for the general contractor to crowd him than it would be for the architect or owner to do it. If it is admitted that an owner is likely to get either a cheaper or a better building, or both, when he divides his contracts as much as possible, is he getting proper treatment at the hands of his paid professional adviser, his architect, when that architect counsels him to let his work to a general contractor and his advice being given, it would appear, for the purpose of saving trouble to the architect? Does the architect's plea that he himself is not paid sufficiently to enable him to give his client the advice that his best interests demand tend to raise the architect's profession in the eyes of his client and the general public? If his present rate of compensation is such that the architect cannot look after the details that he is expected to do where the

work on a building is divided, are there not several plans that an architect should adopt rather than advise the owner to let the work in one contract? If the architect is so situated that he or his office force can attend to it, why not let him demand higher compensation from the owner? If that will not do, if the owner will not pay 2, 3 or 5 per cent. more to his architect for looking after these details, why cannot the architect have some contractor or superintendent or clerk of the works take charge of that part of the work on a percentage of from 5 to 10 per cent.? We understand that it has been done. Or, a cheaper method would often be to have the owner hire some one on a salary to look after this part of the work.

The advantage of these two latter methods over letting the whole in one contract is that all the contracts will finally be let by some one who will have more interest in getting good contractors, in having the work well done than does a general contractor, whose sole interest, or at least his paramount interest, is to get the job done cheaply, and that is the backbone of this protest; that the general contractor has so little regard as to how the work is done; that general contracting breeds and from

have heretofore done as part of their duty and for which they are paid. It is a very sure thing that whatever trouble the architect saves he must before long allow for either directly in what the owner pays him for his services or indirectly in the importance of his profession in the building world. At present an easy way for the architect or for the owner to ascertain which is the cheaper way to get work done is to take bids both ways—that is, from the general contractor for the entire job and also from the different trades in detail. We are perfectly satisfied to abide by the result of such tests. The general contractors will also probably be satisfied, as at present they are not as strongly entrenched in their position as they might be, otherwise they might take the position that was taken in Philadelphia some few years ago, where the Master Builders' Exchange announced that "members should decline to give estimates in the aggregate for work when the owner or his agent are receiving estimates in detail for the same." At Louisville also the Builders' Exchange adopted rules to the same effect.

When bids are taken both ways, it should, however, be understood that bids given to an architect for the different parts of the

an owner who thinks it is not worth his while to make a direct contract with him, or to recognize him in any way. The practice certainly tends to lower the standard of work and to lessen the pride of the subcontractor in his work.

Finish for Slate Roof at Ridge and Hip.

From M. A. Suffolk, Va.—Will The Metal Worker inform me how to make a ridge finish for a slate roof, the same being made from the slate with which the roof is covered, as shown by the inclosed drawings? I tried to put a ridge roll made of galvanized iron on the ridge and hips, but the architect claimed the effect was destroyed. Which is the better finish at ridge or hip, to have the slate lap and use roofing cement, or to have the ends butt together?

Answer.—In Fig. 1 is shown a portion of a slate roof as derived from our

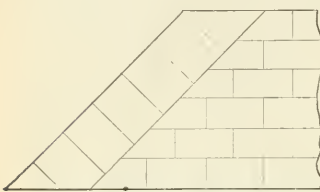


Fig. 1.—The Sketch Submitted by "M. A."

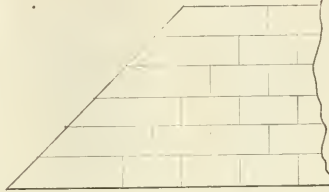


Fig. 3.—Double Width Slate Used at Hip.

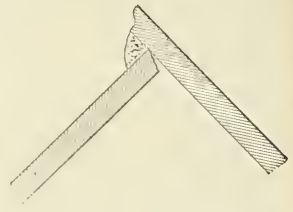


Fig. 5.—Lap Joint at Ridge or Hip.

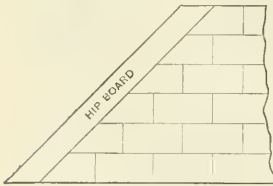


Fig. 2.—Strip of Board Applied to Hip.

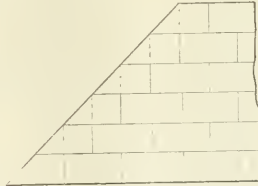


Fig. 4.—Finish Made with Slate of Usual Width.

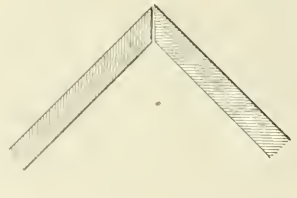


Fig. 6.—Butt Joint at Ridge or Hip.

FINISH FOR SLATE ROOF AT RIDGE AND HIP.

its nature must breed a class of scamp subcontractors, to the loss of those who want to do good work. It is because we think that the architects take pride in their work and in their buildings and wish to have their buildings well built that this appeal is made to them, that this phase of the matter is presented to them. In the past, general contracting has not prevailed in Chicago as it has in the East, and we think that the present tendency comes from Eastern influences, both of architects and general contractors. We understand that general contracting has been in vogue in the East from colonial days, from before the days of architects, as it were; that in early days there was no architect. The contractor builder was everything; all in all. What power, influence and importance the architect has there now is largely in spite of the builder. In New York a good many years ago an architect was hardly known. Most of the houses now are built by builders, and architects have little to do with them. The same state of affairs did and does exist at Philadelphia and other Eastern cities, so that the man who builds his own house in those cities is considered to have done something to distinguish him from ordinary people who buy theirs ready made from the speculating builder. The builder has never been so important here. The architect has always been more important, and why the architects should wish or even be willing to give up so much of their business and responsibility we cannot understand. It is suicidal for them to shirk or to let any one do for them any large part of what they

building are solely to enable him to let the work in separate contracts; and that to disclose those bids, without the consent of the makers of them, to a general contractor to enable him to take the entire work, is as flagrant a breach of fair dealing as it would be to disclose them to any other competitor. We protest because it increases the cost of doing our business, as we sometimes have to figure five times as often as we should to get the same amount of work direct from the owners or architects. We protest because it tends to poor work, as very few general contractors are nearly so particular as to the quality of work done as they should be, and will let work to the cheapest man, often when they know the chances are against his doing a good job. The temptation to do this is strong. Their interest in the job is solely to make what they can out of it; they will not give a dollar preference for a first class job, where an owner would give ten; all they require is something that can be made to pass. We also protest because so many of the general contractors do not pay their subcontractors as promptly as they should; many of them do not pay nearly as promptly as they get their own money, and some of them refuse to settle with or pay their subcontractors until long after they have received their own money. The tendency, from our point of view, is certainly to increase the cost of doing business, which must, when things are settled, come out of the owner; to lower the quality of the work, and to make the subcontractors feel, even the best of them, that it is hardly worth while to do a good job for

correspondent's drawing. The hip finish is made by laying one row of slate with the edges parallel with the hip. To make this finish a hip board, which is about one-half the width of the slate used, is first nailed to the hip, as shown in Fig. 2. This board can be cut on a bevel, being 1 inch thick at the hip and $\frac{1}{2}$ inch thick where the slate joins. The roof slate are then cut on a bevel so as to butt against the edge of the board. Paper can then be put over the boards, when the hip slate are to be laid as shown in Fig. 1, and secured by nailing. Another kind of finish is shown in Fig. 3, the hip slate being of double width, so that for a roof of the pitch shown they extend up the roof sufficiently to allow for proper nailing. If slate of ordinary width were used for this finish, as indicated by the dotted lines in Fig. 4, the slate would not extend up the roof far enough to be nailed. There are a number of methods for making the joints at hip or ridge. For the hip sheet metal caps can be

placed over the hip joints, being so laid as not to be exposed, but extending up the roof far enough to be nailed and laid with each row of slate. The slate can be laid with butt joints at the hip, as shown in Fig. 5. Another method is to dispense with the caps and bed the hip joints in roofing cement. Lapping the slate, as shown in Fig. 4, and then filling with roofing cement does not give as sightly a finish as is shown in Fig. 5. For a ridge finish the last row of slate can be laid with butt ends, being laid in cement at the ridge. Another method is to place bent strips of sheet metal over the ridge, the strips to extend on either side nearly as far as the last row of slate. After these strips are in position the slate are applied. When finishing without a ridge roll the rail heads can be covered with roofing cement. When making a butt joint, as shown in Fig. 6, the slate are to be cut from the upper side, thus giving the slate a beveled edge.

FLASHINGS.

THE 1895 CATALOGUE issued by the St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn., contains a great deal of information of interest to the roofing and cornice trade. In an introductory note they direct particular attention to their patent slip joint constructions, the plates being galvanized after they are atamped and thus given a perfect coating. They also allude to their system of remodeling, by which they can beautify an old or unsightly building, while offering, they say, an absolutely dry and warm construction. In the earlier pages a number of samples of galvanized work are illustrated, showing the material adapted to all sorts of buildings of all sorts of architectural design. Fine half-tone engravings, showing the appearance of their rock face plates, follow. The transformation of an old building is likewise shown. The ceiling work comes next, very handsome examples of this form of interior finish being presented. A number of pages are given up to cornices. Metal shingles are illustrated, likewise steel roofing. Toward the close of the catalogue a variety of miscellaneous articles are illustrated, such as conductor pipe, eave troughs, &c. Ridges, hip molding and finials are shown in various styles. Tables of sizes are given wherever called for, and prices accompany the illustrations.

HENRY BEUTELSPACHER, Bridgeport, Conn., has commenced work on his contract for metal work on the new German church at Torrington, and has just completed the plumbing and tinning of Christian Biltz's new house on Sherman street. He also has a contract for piping, &c., at the Eckart brewery, and has the contract for the metal work and gas fitting at the new Greek church at East End.

THE LOUIS BIERLER CORNICE COMPANY have been incorporated at Chicago, with a capital stock of \$10,000; incorporators, P. L. Biegler, T. A. Delamater and F. B. Dickinson.

BEER & HESS have recently removed their office at 109 more commodious and centrally located quarters at 119 West Thirtieth street, New York City. This move, we understand, was made necessary by the rapid increase in their

business and in order to provide better facilities for turning out cornice and skylight work and for executing tin, slate and metal roofing.

A REVISED PRICE LIST for Bangor roofing slate was adopted at a recent meeting of the Bangor Roofing Slate Manufacturers' Association. Particulars of the change will be found in our trade report columns.

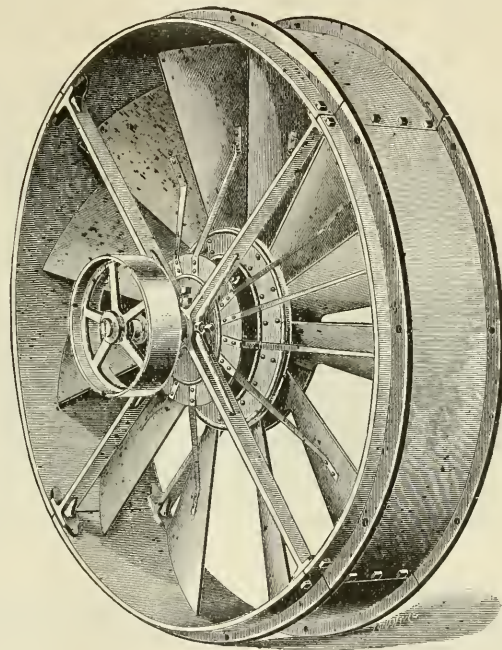
The Smith Flanged Ventilating Fan.

Our illustration shows the method of constructing the Smith ventilating fan, manufactured by the Huyett & Smith Mfg. Company, Detroit, Mich., of sizes 7 feet or more in diameter. It will be noticed that the case or rim of the fan

the fan case. These flanges are bored for anchor bolts, which extend clear through the wall in which the fan is placed, thus making the fan perfectly firm.

The hardness which is lacking in aluminum can, it is said, be imparted to it by the addition of chromium, under a new process just introduced. The method is claimed to render the aluminum as hard as chrome steel.

A new emery wheel was recently subjected to an unusual test by the Springfield Emery Wheel Company of Bridgeport, Conn. The wheel is 14 inches in diameter by 2 inches thick. It was run at a speed of 4000 revolutions per minute, which is nearly three times the



THE SMITH FLANGED VENTILATING FAN.

is made in four sections, each section being firmly bolted to the fan arms. In order to facilitate the handling of these fans they are always shipped knocked down, or in other words, the arms, shaft and case are removed from the fan. They may be set up or put together very readily by simply bolting the different parts together. The hanger arms are made in sections bolted together at the center, forming a sleeve in which the journal box is secured and made adjustable by means of the four bolts engaging the sleeve with the bearing, as shown in the cut. The fan wheel is put together with bolts, and is also shipped knocked down. The blades of the wheel are provided with braces securing them to the brace disk, which in turn is secured to the fan shaft, thus making a strong, tight wheel. All parts are marked and numbered so that they may be put together without difficulty by any competent mechanic. As these fans are usually built in walls or partitions, they are provided with heavy angle iron flanges, which are firmly bolted to

usual speed of a wheel of this size. The wheel suffered no harm from the great strain to which it had been subjected.

The insurrection in Cuba is likely to exert a serious effect on the export business of this country with that island. Manufacturers are reported to be unwilling to do any business in that quarter except on a strictly cash basis. The trouble has already caused a falling off in the corrugated iron roofing trade with Cuba. The latest advices, however, point to the likelihood of the breaking up of the insurrection within a short time.

A consular report to the French Government from Cape Town, South Africa, mentions that house furnishing goods of cast and wrought iron and tinware have a very considerable sale in the Cape Colony. Copper kitchen utensils are rarely used. Enameled ware offers the best field.

PLUMBING and GAS FITTING.

Growth of the National Association of Master Plumbers.

In reviewing the work of the National Association of Master Plumbers, National President John Mitchell finds that during the present fiscal year 19 local and 5 State associations have been formed, and reckoned from the *per capita* tax already received, represent 283 new members, as follows:

Florida Association	18
Arkansas Association	30
Northampton, Mass.	18
Asbury Park, N. J.	12
Janesville, Wis.	4
Harrisburg, Pa.	15
Allentown, Pa.	14
Scranton, Pa.	21
Individual members	84
Aurora, Ill.	6
Bloomington, Ill.	5
Joliet, Ill.	5
Springfield, Ill.	8
Rock Island and Moline, Ill.	10
Elgin, Ill.	6
Danville, Ill.	4
Ottawa, Ill.	5
La Salle and Peru, Ill.	5
Jacksonville, Ill.	4
Mendota, Ill.	4
La Grange, Ill.	5
Total	283

It will be seen that, as compared with the same period last year, when there was an increase of 153 new members, there is an increase of 125 new members over the increase of last year. State associations have been formed in Wisconsin, Nebraska and Tennessee, which will further strengthen the National Association.

Plumbers' List of Manufacturers.

A year ago last April the National Association of Master Plumbers published a list of all the manufacturers and jobbers of plumbing material who approved the protective resolutions of the association, better known as the Baltimore resolutions. President Mitchell informs us that since that time many firms whose names are not on the list have signed the resolutions, necessitating the publication of a new list, copies of which will be mailed direct to the trade. He further states that several firms have complained of the omission of their names, and in order to afford all an opportunity to have their names especially recommended to the trade he invites all manufacturers and jobbers who approve of the resolutions to send to national headquarters, John Mitchell, 113 Hudson street, New York City, for copies for signature. The new list will go to press on March 31.

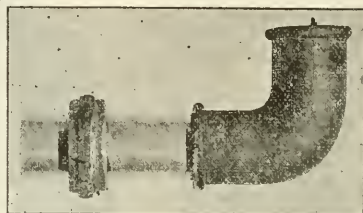
ALFRED WHITE and BENJAMIN S. COURTIS, Lynn, Mass., have left the employ of the L. A. May Company and

formed a copartnership in the plumbing business. They will occupy Chamberlain's old stand on Mulberry street.

The Douglas Rubber Elbow.

The John Douglas Company, 162 to 166 Poplar street, Cincinnati, have just brought out a rubber elbow for use in making tank connections with water closets, which is herewith illustrated. This elbow is fitted on a brass tube with a slip joint connection. A brass sleeve, threaded on the inside and fitted with

is used instead of the needle point, which, it is said, precludes any possibility of the orifice, through which the gasoline passes, from becoming enlarged. The arrangement of the turner is also such as to permit of its being turned in any direction for burning paint, melting a joint or heating objects, and does not require packing to keep it tight. As will be noted, the furnace is provided with an iron vessel for melting solder, &c., or the vessel may be dispensed with and a cover placed in position when it is ready for

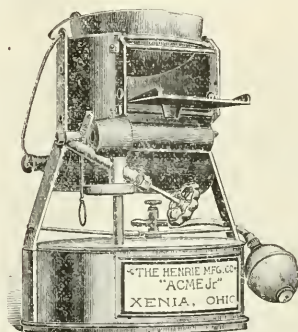


The Douglas Rubber Elbow.

a rubber washer, is placed on the brass tube referred to. It can be adjusted at any distance desired and tightly screwed in place. This elbow is claimed to insure a full and smooth water passage to the bowl. A 2 inch or vent connection of this description will also shortly be placed on the market. Geo. L. Bottum, 131 Lake street, is Chicago manager for the company.

The Henrie Improved Plumbers' and Tinnners' Soldering Furnace.

The Henrie Mfg. Company, Xenia, Ohio, have just brought out the improved furnace especially designed for



The Henrie Improved Plumbers' and Tinnners' Soldering Furnace.

plumbers' and tinnners' use illustrated herewith. They say its construction is such as to be absolutely proof against leakage, the burner being so arranged as to require no packing. A blunt valve

is used instead of the needle point, which, it is said, precludes any possibility of the orifice, through which the gasoline passes, from becoming enlarged. The arrangement of the turner is also such as to permit of its being turned in any direction for burning paint, melting a joint or heating objects, and does not require packing to keep it tight. As will be noted, the furnace is provided with an iron vessel for melting solder, &c., or the vessel may be dispensed with and a cover placed in position when it is ready for

Draining Plumbing Systems.

From G. D. B., Canfield, S. O.—We enjoy the letters of inquiry in *The Metal Worker* and the comments upon them very much, and we receive a great deal of information from them that is hard to get otherwise. We in our turn would like to ask our brethren of the colder climes how to arrange a system of plumbing in a residence so that there will be no trouble of freezing up and bursting of pipes in cold weather. Most of the houses here are built very open, with no provision for heating or keeping the pipes warm. In our work we place a stop and waste cock in the ground with a case around it and having a rod running up to a convenient point. The pipes are all graded so as to drain this cock. We are often told, however, that in the North, where the climate is more severe, no such trouble is required, and we suppose that it is because the pipes are better protected. We would like to hear from plumbers on this subject.

CAMP & CRANE, 27 Maiden lane, New York, display in their window several different kinds of shower baths, one being designed for use with the old style lever bath bibbs, a three-way brass piece being used to effect the connection. Rubber hose runs from two ends of the brass piece and connects with the bibbs. From the other end the hose for the shower or spray is connected. In this way the shower attachment may be used in connection with old bath fixtures.

Central Supply Association.

The quarterly meeting of the Central Supply Association, which is composed of the wholesale dealers and manufacturers of plumbers' supplies from Pittsburgh, Pa., to the Missouri River, was held Tuesday, 12th inst., at the Southern Hotel, St. Louis, Mo. There were present 72 members and 13 represented by proxy, making a total attendance of 85 out of a membership of 120.

Morning Session.—The morning session opened at 10 o'clock and was devoted to routine business. The report of President Wolff was read and favorably received. The treasurer's report showed the finances to be in good condition, and the secretary reported a number of applications for membership which were favorably acted upon. The association then adjourned to meet at 2.30 p.m.

Afternoon Session.—The principal business of the afternoon session was the discussion of the motion to "request trade papers to discontinue quoting net prices on wrought iron pipe." This motion called forth considerable debate and was finally adopted, and the secretary directed to request the different publishers to abide by the resolution. At 5.30 the association adjourned.

At 6.30 the association sat down to a sumptuous banquet tendered them by the St. Louis Supply Association, after which they adjourned in a body to the Olympic Theater, where the opera "Robin Hood" was the attraction, and where all the boxes and the first three rows in the parquet had been reserved for them. The members of the opera troupe made some timely hits at the expense of some of the older members of the association, which were greatly enjoyed by those present.

The officers of the association are: President, John F. Wolff, Chicago. First vice-president, John Walker, Detroit.

Second vice-president, Theo. Ahrens, Jr., Louisville, Ky.

Secretary, Wm. M. Webster, Chicago.

Treasurer, O. F. Felix, Pittsburgh, Pa.

The St. Louis Supply Association is officered as follows: President, W. E. Althaus of the Western Brass Mfg. Company; vice-president, Thomas Cahill of Cahill, Swift & Co.; secretary, Albert Webb of Albert Webb Supply Company, and treasurer, G. F. Detrick of Ripley-Detrick Supply Company.

Eastern Supply Association.

The regular quarterly meeting of the Eastern Supply Association was held at 284 Pearl street, New York, last Tuesday. The following business concerns were represented: J. L. Mott Iron Works, DuBois Mfg. Company, Owen & Salter, Fred Adee & Co., J. Regester & Sons, Jno. Trageser Steam Copper Works, Mayor, Lyne & Co., Hoy & Co., Haines, Jones & Gadbury, Curtis & Co., Colwell Lead Company, C. Hoffman, Jr., Eaton, Cole & Burnham Company, McNab & Harlin Mfg. Company, R. M. Wilson, Miller & Coates, Henry Huber Company, Stewart Ceramic Company, Smith & Anthony Company.

President John Reid occupied the chair.

The secretary reported a membership of 30 concerns, covering the following territory: New York, 17; Philadelphia, 6; Washington, 1; Baltimore, 1; Cohoes, 1; Utica, 1; Home, 1; Trenton, 1; Albany, 1; total, 30.

The treasurer's report showed a balance of \$900. The dues of the association were fixed at \$10 per year, and it was agreed that the fiscal year of the association should commence March 1, 1895. It was stated that many letters had been received by the association asking who were entitled to recognition as dealers. On motion, it was decided that such queries can be answered only when they relate to its members.

A communication from the Association of Manufacturers of Heating Apparatus was received stating that "the members of this association agree not to exhibit any goods at the meeting place, or spend any money in entertaining the members of the Master Steam and Hot Water Fitters' Association or Master Plumbers' Association, either local, State or National, and that we also agree to discountenance, as far as possible, the sending of representatives to such meetings."

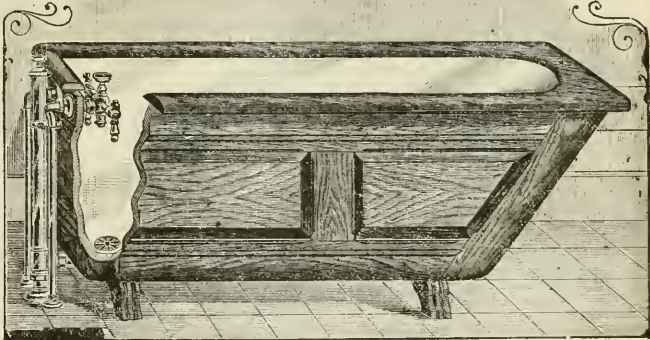
A communication was received from the Willets Mfg. Company, Trenton, N. J., stating that through the solicitation of the Central Supply Association all their ware is now being stamped with their name, and that they are using the iron pipe thread.

communicate in writing with the secretary of the Master Plumbers' Association of said State or locality, informing him of the fact that the policy of this association is to adhere strictly to the Baltimore resolutions, and that as the said Baltimore resolutions specifically state that licensed plumbers regularly engaged in the plumbing business, and with an established place of business, are entitled to purchase plumbing goods, this association does not deem it wise or expedient to depart from that rule. In the event of failure to receive redress from the local association, it shall be the duty of this association to again take up the matter and refer it to the secretary of the National Association, and to notify him that until such time as the boycott has been raised the operation of the Baltimore resolutions will cease."

There being no further business the meeting adjourned, and the members then repaired to the Fulton Club to partake of a luncheon prepared by the Entertainment Committee.

Hardwood Bathtub.

The accompanying cut shows a hardwood bathtub which C. A. Blessing,



Hardwood Bathtub.

President Reid announced as a standing committee on entertainment, Messrs. Hoffman, Douglas and Trageser.

It was also announced that the National Executive Committee is composed of John Clifford, L. D. Lawin and John Walker of the Central Supply Association; E. F. Souther, L. H. Tillinghast and F. J. Knox of the Plumbers' Supply Association of New England; and John Reid, Jas. E. Salter and Henry S. Regester of the Eastern Supply Association.

The following resolutions were then unanimously adopted:

"Whereas, It has been customary in the past for manufacturers and jobbers of supplies to have their representatives attend the meetings of the State and National Associations of Master Plumbers, entailing a great loss of time on the part of the representatives and financial loss to their houses; be it

Resolved, That this association discountenance such action in the future.

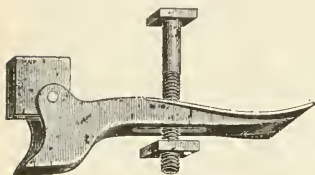
Resolved, In case a State or local association of master plumbers makes a demand upon any member of this association to confine its sales of plumbing goods in that State or locality to members of said Master Plumbers' Association, such demand shall at once be referred by such member to the secretary of this association. The secretary of this association shall thereupon com-

Philadelphia, Pa., has recently placed on the market. With the exception of the copper lining the whole of the tub is made of hardwood. The tub has round corners, molded legs and raised panels, and is fitted with Blessing's all nickel plated Novelty waste and overflow, double compression or Fuller bath bibb and pipes to floor. The tub is made in cherry, ash, oak and maple. Other styles of hardwood tubs are manufactured by Mr. Blessing, having round or square bottoms and corners, turned, molded or carved legs, paneled and plain casings, natural wood finishes, or handsomely painted and decorated, and with and without fittings. All tubs are made in the usual copper weights, 12 to 20 ounces, and in lengths running from 4 to 6 feet. They are also supplied in quartered oak or walnut cases. The tubs are meeting with a good reception at the hands of the trade, and are being specified by architects, particularly for bathrooms where natural wood wainscoting has been used. They are said to be exceedingly durable, and when the linings are worn out they may be easily replaced by new ones.

THE FACTORY of the Victor Company, at Blairsville, Pa., is about completed, and will begin making bathtubs and sanitary ware within two or three weeks.

Sherman's Basin Clamp.

We show in the accompanying illustrations Sherman's basin clamp, manufactured by the H. B. Sherman Mfg. Company, Battle Creek, Mich., and placed on the market through the jobbing trade. Fig. 1 shows the clamp itself, Fig. 2 shows it adjusted to a bowl with thick flange, while Fig. 3 shows



Sherman's Basin Clamp.—Fig. 1.—General View of Clamp.

it adjusted to a bowl with thin flange. The basin clamp proper is made entirely of sheet brass, and from its shape is very strong, while at the same time it presents a neat appearance. One of the most important advantages claimed for it is its adjustability, permitting its use with bowls having either thick or thin flanges, as shown in the illustrations Figs. 2 and 3. In changing the adjustment it will be seen that the plane surface of the clamp offers a flat bear-

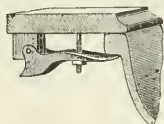


Fig. 2.—Clamp Adjusted to Basin with Thick Flange.

ing for the nut on a bowl to be tightened up against. The variation in the clamp is attained by the little yoke or U shaped piece, as shown in Fig. 1, being hung out of the center. This allows of four different adjustments by simply turning the yoke with the fingers, and it will be seen that the change can be made instantly. The yoke is attached to the clamp in a substantial manner. Another feature to which the manufacturers allude is the length of the slit provided for the bolt,

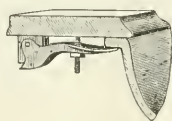


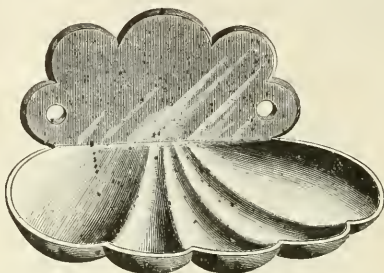
Fig. 3.—Clamp Adjusted to Basin with Thin Flange.

so that if a hole has been drilled out too far for the average basin clamp, as frequently happens with oval basins, the Sherman clamp can be used without trouble. It is pointed out that the adjustments can be made without removing the bolt from the clamp and in a moment's time. The clamp being always parallel with the marble, it is mentioned that it removes the liability of the bolt pulling out of the marble when the nut is tightened up. The Sherman

Mfg. Company will send samples of these clamps free of charge on application.

The Columbus Soap Cup.

We show in the accompanying illustration a general view of the Columbus brass soap cup of a special patented design and made by the Columbus Brass Works, Columbus, Ohio. The design of this cup, it is said, prevents the bad odor or collections of dirt from the soap and water, which is a great source of trouble with cups having a false bottom. The cup illustrated can be cleaned by one stroke of the sponge. It



The Columbus Soap Cup.

is made of either polished brass or nickel plated and can be fastened to the back of any washstand with two small screws.

TRAPS AND VENTS.

McCAHAN & Co., 8 North Central avenue, Baltimore, Md., distribute circulars illustrating and describing some of their gas goods. One of the devices shown is the Surprise gas bath heater; also the Surprise gasoline portable bath heater.

THE GAS FITTING APPLIANCE COMPANY, Newburg, N. Y., have moved into their new store at 62 Second street.

GEORGE MORLIDGE has opened a plumbing shop at 633 York street, Newport, Ky.

F. LENOX AND A. CLEVELAND will open a plumbing shop at Hamilton, N. Y.

In *The Metal Worker* of March 9 appeared an article entitled "The Star Coupler on Supply Pipes" and an illustration was shown of the universal application of these couplers. We accidentally omitted to state, however, that they were manufactured and sold by the Star Coupler Company, 801 Walnwright Building, St. Louis, Mo. If the Star Coupler Company were not so well known to the entire trade the omission would have been more serious than it is.

THE WESTERN GAS FIXTURE COMPANY, Toledo, Ohio, had a small fire last week.

THE BOARD OF HEALTH of Detroit, Mich., have reduced the salary list of the city officials in their department from \$45,054 to \$23,300. To do this a number of employees had to be cut off, and several offices were abolished altogether. The number of sanitary inspectors was reduced from 16 to four, and the garbage department was abolished, throwing out the two inspectors and a clerk. Only one plumbing inspector was allowed, at a reduced salary, and

no clerk. The office of sanitary expert was abolished, and it was not thought necessary to employ a stenographer. The salaries of most of the offices were reduced. The additions include a sanitary engineer, with six assistants, who will look after the inspection of food, milk, plumbing and sanitary regulations. The office of laboratory expert was also established.

A BILL to license plumbers is on its passage through the Legislature of Wisconsin. It provides that no plumber or plumbing firm shall do business without a license, in any city having over 7000 inhabitants. Application must be made to the board of health,

which shall appoint a board of examiners to examine into the qualifications of all applicants, and certify them to the board of health, which shall issue licenses good for one year. Fee \$2 for employing firms, 50 cents for journeymen plumbers, 50 cents for renewals. An inspector of plumbing is also to be appointed, to be a person not interested in the business. Each city of 7000 or over shall also fix by ordinance regulations for plumbing and apparatus to be used, no plumbing except repairs to be done without a permit. Violation of the law is made a misdemeanor, punishable by fine not exceeding \$50.

J. N. HEVEY, Keene, N. H., has taken Walter A. Whitman into partnership in the plumbing and gas fitting business. The firm name will be Hevey & Whitman. The business will be increased by the addition of electric supplies of all descriptions.

JOHN B. KELLY has opened a plumbing shop at 42 Front street, Ballston Spa, N. Y.

THOMPSON & MORRISON, plumbers, Amherst, N. S., have been succeeded by C. A. Luby & Co.

THE BIRNEY PLUMBING COMPANY have been incorporated at Chicago, with a capital stock of \$3000, for general plumbing. The incorporators are C. R. Jones, William F. Henning and C. Woodward.

MCCAMBRIDGE & Co., LIMITED, Philadelphia, have just issued a handsome supplement of 24 pages to their catalogue B, descriptive of their Syphoclosets and urinals. The publishing of the supplement was necessitated by the many additions to the line since the publication of the original catalogue. Many of the styles shown in the catalogue appear in the supplement. A feature of the new styles shown is the method of attaching the seat to the bowl. This is accomplished by means of a solid spindle passing through a sleeve at the back, and forming part of the porcelain bowl. This spindle forms a bearing for the seat mountings, and

makes a safe and durable fastening. The closets are all made of vitreous porcelain and are shown in plain and embossed patterns, with a line of tanks, ornamented and plain, automatic flushing seats, chain and guide pulls, pipes, straps and fittings. Page 11 shows a public toilet room equipped with Sypho closet and urinal. The urinal combination is shown to be of the automatic type, regulated to flush by means of an automatic siphon tank as frequently as desired. The urinal is further described on page 21, and its special adaptability for hotels and public places explained. Page 20 is devoted to Howell's flexible water closet connections, as used on most of the company's closets. Pages 22 and 23 are utilized for detailed price-lists of the different Sypho combinations, and the concluding page is occupied by the company's brass toilet paper cabinet, which commends itself as a finishing touch to the equipment of a modern first class bathroom. The supplement is about 14 x 10½ inches in size, and is bound in buff paper covers.

THE BILL for the registration of plumbers has been again introduced into the British House of Commons in the same form in which it failed of passage last year and in 1893. The prospects of its becoming a law in its present shape are regarded as being very remote. A strong opposition exists to it on the part of many ironmongers who combine a plumbing business with their own trade.

E. A. WEIDNER and J. A. MORGAN-THALER have dissolved partnership in the plumbing business at 230 Wells street, Milwaukee, Wis.

THE STOP COCK COMPANY, 50 Cliff street, New York, issue a neat little booklet entitled "Servants or Masters?" relating to an automatic appliance by which both the water and gas supply to a building can be shut off to prevent freezing, overflowing or other accidents occurring during the night.

THE DALTON INGRESOLL COMPANY, 171 High street, Boston, Mass., are issuing their 1895 supplement to Catalogue "C." It contains 32 pages of fine enameled paper and first-class printing. The second page contains a notice that they will keep any of the water closets illustrated in it in repair for three years if they become inoperative through defect in principle or construction. The first 20 pages are devoted to showing their line of hand action siphon closet and their hand and seat action wash down closets. A sectional view is given of all the different closets showing their construction, also a cut of a floor and wall on which the dimensions are given of the space required to set them. Some of the closets are shown all earthen, others with an enameled iron trap. The bottom of the flush tanks for these closets is just level with the seat, and some are shown with the flush tank behind a partition, and it is stated that in public places the run of soil pipe can be shortened by arranging the closets in two rows with an inclosed space between for the flush tanks and piping. The Puritan enameled roll bath is next shown in connection with a combination needle and shower bath. This bath rests directly on the floor, having no feet. It is followed by several illustrations of combination needle and shower baths in connection with bathtubs and separate. Several styles of siphon tank valves and flush tanks are shown and some bath and lavatory combination fixtures.

THE NEW SHOWROOMS of the Gilbert & Barker Mfg. Company, 83 John street, New York, will be heated by a Champion boiler made by the Thatcher Furnace Company, 240 Water street, New York. The salesrooms are being opened to display their machines for the manufacture of gas and gas appliances for cooking, heating and manufacturing purposes, not the least interesting of which is the new Clark's instantaneous gas water heater.

DUBOIS & DARROW, 61 Gold street, New York, are closing out their plumbing supply business previous to entering into a manufacturing business in another field on May 1.

P. J. HART of the firm of Hart & Shea, plumbers and gas fitters, at 10 Putnam street, Fitchburg, Mass., will open a store at 353 Main street, in Central Block.

TAYLOR & HILBORN, Bucyrus, Ohio, gas fitters and plumbers, will remove about April 1 into the audience room of the old M. E. Church, which will be fitted up for their use.

THE WORCESTER MASTER PLUMBERS' ASSOCIATION, Worcester, Mass., in existence for several years, is now a thing of the past. The organization formally disbanded at a meeting held in the rooms of the Builders' Exchange last week. It was voted to pay all the debts of the association with the funds in the treasury, which are ample for the purpose, and then to sell all the association property, which is valued at about \$200.

THE PLUMBING FIRM of Lealie & Wilson, West Lafayette, Ind., are moving into the room recently vacated by R. N. Goans' candy store.

GEORGE H. STICHTER, an old member of the Reading Baseball Club, has engaged in the plumbing and gas fitting business at 341 South Sixth street, Reading, Pa.

THE PLUMBING BUSINESS conducted by Harper & Westcott, at 27 Howard street, Albany, N. Y., has been dissolved by mutual consent, and Horace F. Westcott will continue the business. He is president of the Master Plumbers' Association of Albany, chairman examining board of master plumbers, and an officer of the State association.

KINGSLAND & Co., Burlington, Vt., plumbers and dealers in house furnishing goods, have disposed of their stock to the G. S. Blodgett Company and will go out of business.

Death of Alexander McKay.

Alexander McKay died last Saturday at his residence, 136 Canfield avenue, East, Detroit, Mich., aged 42 years. Mr. McKay was well known in business and social circles, being the secretary and treasurer of the Park-McKay Company, manufacturers of plumbers' supplies. He came to Detroit from Dutton, Ont., in 1869, and engaged in the plumbing business with Ferguson, Mouat & Co. At a later date he organized the Park-McKay Company. He was a successful business man. The deceased leaves a widow and two daughters.

It is stated that the International Pacific Cable Company, who failed to get a Federal charter from the last Congress, will go ahead with their project of connecting San Francisco, Honolulu, and Yokohama by cable, operating under a State charter.

News and Notes.

The insurrection in Cuba threatens to interfere seriously with the trade of that island.

During the fiscal year 1893-94 the sum of \$3,342,375 was applied by the county and municipal councils in England, Scotland and Wales to the promotion of technical education.

The United States Minister at Madrid, Spain, has reported to the State Department that he has obtained from the Spanish Government an order for restitution in five test cases of claims for excess of duties paid by United States importers into Cuba.

Electricity, according to a Canadian Customs decision, comes under the head of "Unenumerated articles," paying a duty of 20 per cent. when imported into that country. The question recently arose over a proposition to transmit power from the American side of Niagara Falls to adjoining Canadian cities.

The Congress of the State of Nuevo-Leon, Mexico, has recently passed a law exempting from all taxes new industrial enterprises locating in that city in the next two years having a capital exceeding \$1000. The exemption is to last six years, dating from the time when the capital shall be deposited.

A Philadelphia paper states that the Cramps of that city have a contract to build a 20 knot steel steam yacht for an unnamed owner, which will be one of the finest pleasure vessels afloat. The dimensions given are 174 feet on the water line and 200 feet over all, with 23 feet beam and 11 feet draft, and 247 tons burden.

United States Immigration Commissioner Stump has prepared statistics showing that during the past seven months immigration into the United States has decreased 40 per cent.

The British Board of Trade returns for February show a decrease in imports of \$28,080,000 and in exports of \$8,208,000, as compared with those of February, 1894.

The fire losses of the United States and Canada for the month of February, as estimated by the *Journal of Commerce*, aggregated \$12,360,200, an increase over the February figures for 1893 and 1894. The following comparative table exhibits the losses for the first three years:

	1893.	1894.	1895.
January...	\$17,958,400	\$10,868,400	\$11,495,600
February..	9,819,800	11,297,600	12,360,200
Totals..	\$27,778,200	\$22,166,000	\$24,255,800

The lifting of the acute distress which has for a long time prevailed among the settlers in Western Kansas is evidenced by the fact that 12 counties have notified Governor Morrill that they are in no further need of outside aid.

It is proposed to connect Pittsburgh with McKeesport, West Newton and Greensburg by means of an electric trolley line. The Widener-Elkins syndicate, which controls so many street railroads, is said to be at the back of the scheme.

The explanation of a number of suspicious fires which have been occurring in the east side of New York City was found in the exposure and conviction of an organized gang of "firebugs," who were last week awarded exemplary sentences in State's prison.

The S. & W. Drilling Attachment.

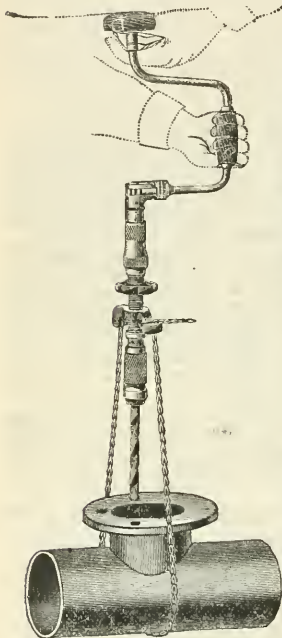
We show in the accompanying illustrations the S. & W. drilling attachment manufactured by the Smith & Winchester Company, Boston, Mass., with New York office at 174 Fulton street. The simplicity of the tool is particularly referred to, and the illustrations clearly show its operation and usefulness. The drilling attachment is used in connection with an ordinary bit brace for the drilling of cast iron, steel, wrought iron or any metal which it is possible to drill by any means. The manufacturers allude to the difficulty of keeping a constant pressure where the brace drill is used. With the S. & W. attachment, however, it is stated

the manufacturers as Style A. Fig. 3 shows the same attachment with adjustable chuck for square shank drills and is known as Style B. These drills can be obtained from dealers throughout the country as well as from the Smith & Winchester Company.

The new ship canal between the Baltic and North Seas is to be opened on June 20 by Emperor William of Germany with imposing ceremonies. A naval parade of vessels of war of all countries is announced as a leading feature of the programme. The canal, which has cost \$37,440,000, was begun in June, 1887, and over 8600 men have been employed on the work. It starts at Kiel, on the Baltic Sea, crosses the

manufacturing establishments in the State, with a capital of \$119,667,316 and employing 107,054 persons. Baltimore possesses 5265 establishments, capitalized at \$92,723,677.

The sanitary ware operators, who have recently reorganized for the purpose of resisting any further reduction in their wages, held a meeting at Trenton, N. J., which was attended by operative potters from Baltimore and Ohio, when the constitution and by-laws were adopted, the principal features of which are the obliterating of the individual contract system, fixing a uniform price for each piece of work and prohibiting the manufacturer from taking on any apprentices. The attitude of the men



The S. and W. Drilling Attachment.—
Fig. 1.—Drill in Use.

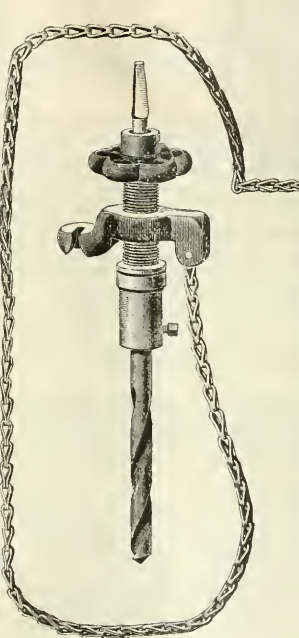


Fig. 2.—Drilling Attachment, Style A.

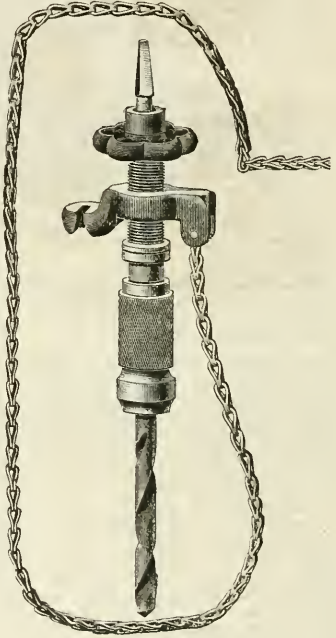


Fig. 3.—Drilling Attachment, Style B.

that an inch hole can be drilled with great rapidity through metal of any thickness with no power from the operator except the mere turning of the drill. Fig. 1 shows the drill as it would be used in boring through the flange of an ordinary piece of pipe, and indicates clearly the manner of operating the drill. The device is simple in construction and consists of a spindle to one end of which is fastened the drill, and to the other end the bit stock. Outside of this spindle is a tube having threads on the outer side which pass through the yoke to which the chain is attached and which holds the drill to its work. Attached to this tubing is a small corrugated wheel, and as the drill enters the metal the wheel is turned sufficiently to keep the drill at its work. Excessive friction between the tubing and the spindle is prevented by 12 steel balls which reduce the friction to a minimum. Fig. 2 shows the drilling attachment separate as adapted for $\frac{1}{4}$ -inch round shank drills, and is classed by

province of Holstein and joins the river Elbe at Brunsbüttel, below Hamburg. The length is $53\frac{1}{4}$ miles, average depth 29 $\frac{1}{2}$ feet, width at bottom 72 feet and at water level 213 feet. There will be two locks, one at the Baltic end and one on the Elbe.

At the Charlestown Navy Yard, Boston, Mass., an important test will be made next week of the Ammen ram "Katahdin," to ascertain the vessel's metacentric height; that is to say, to find out her center of gravity and point of water pressure. The test is regarded as being of the greatest importance, and it will be attended by naval authorities from Washington and representatives of the Bath Iron Works, where the ram was built.

A. B. Howard, Jr., chief of the Maryland Bureau of Industrial Statistics, in his annual report for 1894 shows a total of 7485 mechanical and

is stated to be very firm on the question of resisting what they consider further encroachments by the manufacturers.

Lloyd's Register of British and Foreign Shipping shows that 22 British war vessels were launched in 1892, of 137,000 tons; 16 ships in 1893, 40,000 tons, and in 1894, 29 vessels, of only 32,000 tons. In the course of the last 12 months Russia launched 34,850 tons of war vessels and France 28,690 tons. Thus France and Russia between them nearly doubled the output of Great Britain last year.

A dispatch from New Haven, Conn., states that the Winchester Repeating Arms Company of that city made a shipment last week of 2,000,000 cartridges to the Chinese Government. The company are now said to be working on a large additional order for ammunition from that quarter.

The Bliss Deep-Throat Power Press.

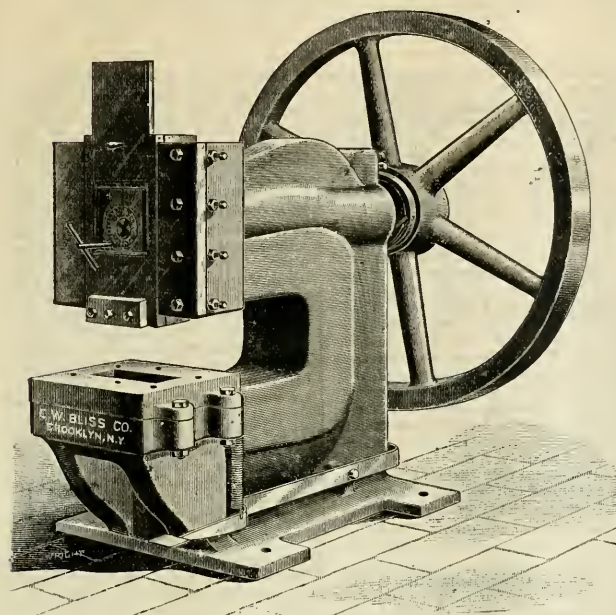
Up to a comparatively recent period the use of deep-throat punches was

top of throat, $9\frac{1}{2}$ inches; motion of slide, $1\frac{1}{2}$ inches; size of bed, 16×16 ; standard opening in bed, $8\frac{1}{2} \times 8\frac{1}{2}$; diameter and face of fly wheel, 54×5 ; weight of fly wheel, 900 pounds; speed of fly wheel, 90 revolutions; the com-

No satisfactory explanation as to the cause of the explosion is given. Fire followed the shock, but was kept within the limits of the wrecked block.

Paper Water Pipes.

The experiments with the new paper pulp pipes, which are made on pretty much the same principle as the fiber pail, have demonstrated to the satisfaction of the *Paper World* that the idea will eventually prove successful. As it now stands, the hand made pipes, formed from crudely worked and irregularly subduced pulp, are not very attractive in appearance nor well enough made to warrant that they will stand the wear and tear to which street water pipes are subjected. However, it would be more of a wonder if the plan of making the water pipes should be a booming success from the start. Time and experiments are essential to the development of all new things. With each new test of the proposed pipes a step in advance is made, and this would seem to indicate that after a few more trials perfection will have been attained. The matter as it now stands is about as follows: Paper pulp, in which there is a fairly good fiber, is agitated with water and run into molds and cast into the form of the ordinary water pipe. The same molds that are used in connection with casting iron pipes are employed. The mode of procedure is substantially the same. Of course there are various strengthening materials compounded with the pulp, otherwise it would not stand a great pressure. The inventors report that these ingredients are inexpensive and simple.



The Bliss No. 78 Deep-Throat Power Press.—Fig. 1.—General View of Press.

almost entirely limited to the punching and shearing required in bridge, railroad and structural iron work, which does not often call for the accuracy and adjustments needed in working blanking, perforating or forming dies on thin sheet metals. Within the last few years, however, much of what had previously been done by hand in the production of stoves, wrought iron ranges, zinc work, &c., has been brought within the range of die operations, calling for a press which combines a deep throat with the necessary accuracy and adjustments. The press shown in Fig. 1 was designed by the E. W. Bliss Company of 11 Adams street, Brooklyn, N. Y., for this purpose.

Its punch slide is guided and gibbed so as to secure accurate cutting and is provided with an eccentric adjustment permitting it to regulate with precision and ease the exact point to which the punch is to descend. The exact nature of this eccentric adjustment is shown in Fig. 2. It can be brought into any needed position by simply turning the pinion wrench shown after having loosened the clamp bolt. The pressure is in this manner always taken on solid metal instead of falling on screw threads. The action of the press is controlled by means of a treadle which operates an automatic clutch, so as to insure the stopping of the slide at the highest point of the stroke. This machine is mostly made as a fly wheel press, but for work requiring a slower and more powerful action it is provided with back gearing. It is also frequently furnished with stay rods so as to fit it for heavier work where a great depth of throat is not needed. The principal dimensions are as follows: Depth of throat, 24 inches; distance from bed to

plete weight of press, approximately, 5500 pounds.

The most destructive natural gas explosion in the history of the Indiana gas

Owing to the largely increasing Pacific Coast traffic of the port of San José, Guatemala, the Government of that republic, says the Bureau of the American Republics, is taking steps to re-establish the old port of Istapa, situated about six miles from San José. It is proposed to construct a harbor there

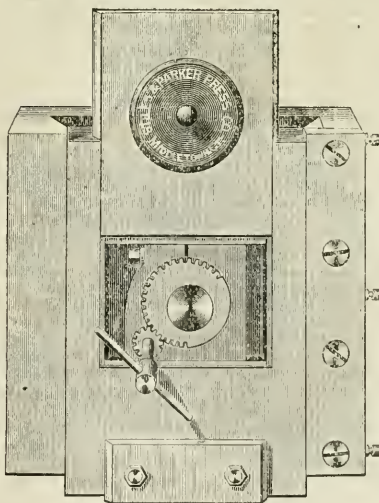


Fig. 2.—Eccentric Adjustment.

belt occurred at Anderson, Ind., at an early hour on the morning of March 5. An entire business block, situated on the Court House square in the center of the city, was literally blown to pieces, causing a direct loss of about \$400,000.

capable of accommodating about 100 vessels, and also to build a branch railway to the port from some point on the Central Railway, thereby relieving the condition of congestion which now prevails in the neighboring port.

TIN PLATES.

SCRAP.

A DISPATCH from Alexandria, Ind., to the Cincinnati Commercial Gazette states that a tin plate factory is to be erected in that locality which will employ about 400 men. The plant is to be on a large scale, covering 216,000 square feet.

FOLLANSBEE BROS. COMPANY, successors to James B. Scott & Co., Pittsburgh, Pa., issue a seasonable circular with the rubricated head-line, "Spring is here." This prefaces the cheering statement that signs point to an improvement in business. The purpose of the circular is to call the attention of the trade to the various well-known brands of tin andterneplates which the firm handle. These include Scott's Extra Coated, Triumph Old Style, Orbit Old Style, Duquesne, Neville, Pittsburgh and Raymond roofing plates, and Blairsville best bright, Clifton, Conemaugh and furnace bright plates. Attention is also directed to their assortment of sheet iron and their stock of tinners' tools and machines.

REPORTS of projected tin plate plants are constantly being published, particularly in connection with various towns in the Indiana gas belt. While some of these are undoubtedly bona fide enterprises, we are advised that others are being promoted merely for the purpose of booming town lots. These items of news should therefore be taken with a certain amount of caution.

THE recent labor difficulty in the American Tin Plate Company's works, Ellwood, Ind., when 50 men in the cold roll department struck for a change in the system of payments, has been adjusted by the company granting the request of the men, and 750 hands are reported to be now at work.

PLANS are reported to have been completed for a third tin plate plant at Ellwood, Ind., to be built by Chicago capital. Work will be begun on the buildings about the middle of April and the plant is expected to be ready for work by October. About 300 men are to be given employment at these works.

BRITISH CONSUMERS are complaining, through the columns of their trade journals, that while the prices of tin plates for export are lower now than at any former period, they are called upon to pay as much for their plates as they paid a year or two years ago, notwithstanding the fact that steel bars and pig tin are both considerably cheaper now than they were at that time.

N. & G. TAYLOR COMPANY's tin plate plant in Philadelphia is reported to be working steadily, not having been affected by the ups and downs of the trade. The demand for their standard brands is such as to oblige them to increase their facilities. The firm, we understand, are now completing the erection of two new stacks, which they expect to have working within a week. Notwithstanding the exceptionally hard winter, which has its effect upon tin house work, the Taylor plant has been running steadily, with the assurance of a good business for their goods the com-

ing season. The company advise us that their genuine Taylor Old Style roofing plates are increasing in sale, as the old roofs covered with this brand testify to its durability.

E. E. ERICKSON, Pittsburgh, Pa., has a contract to erect a new tinning stack for the Pittsburgh Tin Plate Company, New Kensington, Pa.

THE WELSH TIN PLATE MANUFACTURERS seem to be still hankering after an agreement whereby they can arrange to materially advance the price of tin plates. The Iron and Steel Trades Journal of London intimates, however, that it is the owners of tin plate works in Wales, who are also interested in American works, who are endeavoring to entice the Welsh makers to combine to raise the prices. There is, however, a strong feeling against those who have these dual interests, and the Welsh makers are, on the whole, inclined to agree that their best friends are not those who are interested in the American tin plate industry.

THE BRITISH BOARD OF TRADE RETURNS for February show that 33,000 tons of tin andterne plates were exported from Great Britain during the month. Of this amount 23,000 tons were shipped to the United States, against 18,000 tons in the previous month and 13,000 tons in January, 1895.

THE FRANK-KNEELAND MACHINE COMPANY, Pittsburgh, Pa., manufacturer of iron and steel works machinery, have received a contract from Reeves Iron Company, Canal Dover, Ohio, for four double tin mills with 24 x 30 inch rolls, four cold mills 22 x 34 inch rolls, two doubling and one trimming shears.

THE PLANT of the Crescent Sheet & Tin Plate Company, Cleveland, Ohio, is nearing completion and is expected to be ready for operation about May 1 next. At the start out the concern will make black plates, although a tinning department will be added later on. The plant will cost, when completed, about \$150,000, and is expected to turn out about 20 tons of black plates per day. The hot mill will be 175 x 75 feet, and will be driven by two engines, 34 x 72 inch. There will be a 10-ton and a 5-ton electric crane and other machinery, including a dynamo. The tin house will be of steel construction, 105 x 165 feet, with a wing 48 x 48 feet. It will contain ten tinning stacks. The annealing house, with pickling machines and other equipment, will adjoin it.

The tin plate manufacturing firm of Griffiths & Cadwallader, Pittsburgh, Pa., have been dissolved, and the business is being continued by C. W. Cadwallader.

THE NEW PHILADELPHIA IRON AND STEEL COMPANY, New Philadelphia, Ohio, manufacturers of black and galvanized iron and steel sheets, are making important improvements in their plant. Until the middle of January this concern were operating four hot sheet mills with a large Corliss engine, which worked satisfactorily when rolling iron sheets with 22-inch diameter rolls. Large orders for steel sheets of

the finer gauges have constantly been coming in, and the firm have decided to double their power, and are now putting in a pair of 32 x 48 inch Geo. H. Corliss engines, a new and heavier fly wheel, two sets of steel gear wheels, a set of 24-inch rolls, and will considerably increase their cold rolling capacity. The New Philadelphia Iron and Steel Company have six hot sheet mills, two cold rolling mills, bar mill and galvanizing plant. Two of the sheet mills and the bar mill are running right along, and will be kept in operation during the time the improvements and repairs are being made. They are operated by a pair of poppet valve engines. An electric crane and lighting plant are also being added. When the improvements are completed, which is expected to be about May 1 next, the plant of this concern will be one of the best equipped in the country, and when running to its full capacity will be able to turn out about 1400 tons per month of iron and steel sheets from No. 12 to No. 30 gauge and suitable for all purposes.

A NUMBER OF IMPROVEMENTS have recently been made in the plant of the Falcon Iron & Nail Company of Niles, Ohio, manufacturers of iron and steel sheets. A continuous rolling mill has been added to the equipment.

THE STAR TIN PLATE COMPANY, Pittsburgh, Pa., have made application for a charter of incorporation. The incorporators are: James Hemphill, William Wade, Pennock Hart, William F. Dutton and Joseph Fawell. The plant of the new concern will be located on Twelfth street, below Penn avenue, Pittsburgh, Pa. The foundations for the hot mills have been under way for some time and are almost completed. The concern will erect eight hot mills and they will be driven in pairs. Three pairs will be driven by 42 x 60 inch automatic cut off engines and the other two hot mills will be driven by a 28 x 48 inch Corliss engine. There will be six cold mills, and these will be driven by a tandem compound engine with 28 inch high pressure cylinder, 50 inch low pressure cylinder and 60-inch stroke. There will also be the necessary annealing furnaces, shears, pickling vats, &c., and it is expected to have the plant in operation on the manufacture of black plates for tinning purposes about July 1, with a capacity of about 50 tons of black plates a day. It is the intention of the firm to add tinning sets later on and to engage in the manufacture of both tin andterne plate.

H. V. B. NASH of the tin plate firm of T. B. Coddington & Co., 27 Cliff street, New York, left for Europe last Saturday on business connected with the estate of his father, the late Henry Nash of Liverpool, whose sudden death was recorded in these columns last month. Mr. Nash expects to be absent for about a month.

THE MONTHLY STATEMENT of goods in bonded warehouse in New York City shows that 66,940 boxes of tin plate were so held there on February 28, as compared with 76,353 boxes on the same day last year.

STOVE TRADE NOTES.

Foundry Mixtures for Stove Castings.

The most economical and serviceable mixture of irons is the great point sought by the foundry manager. In this matter experience is worth a great deal, but the experience of any single manager is not nearly so instructive as would be the experience of many managers combined. In the hope of securing information from some of the practical men connected with foundry management we print below a letter recently received from a stove manufacturer who has had trouble with his foundry mixtures. The difficulty may be due to the proportions of different irons which he has used. We know that he would be much indebted to any one who could suggest wherein the difficulty lies, and we know the trade would be greatly interested in a discussion of the proper mixtures for stove castings. We print his letter as it is received:

We send herewith a mixture of iron which we have been using without good results, and we would be very glad if some of your practical readers would suggest a remedy. The mixture is as follows:

Thirty-nine per cent. of the pig iron charge is good grade No. 2 Southern Foundry.

Thirty-eight per cent. of the pig iron charge is good grade No. 3 Southern Foundry.

Sixteen per cent. of the pig iron charge is good grade No. 1 Southern Soft. Seven per cent. of the pig iron charge is Jackson County Silvery, carrying 8 per cent. silicon.

As a matter of course, all of the Southern irons are of different brands. By that we mean they come from different furnaces. With the above we use our own scrap, and with each ton of iron charged we add 30 pounds of limestone as flux. This mixture makes an iron that has a great deal of dirt in it, and after the iron is melted and in the ladle there is a quantity of dirt that rises and has the appearance of rust. It is not slag; it simply resembles rust, and it is impossible to skim this away, for as fast as one lot of rust is skimmed there is another lot which takes its place. When the iron is poured and any of this rust gets in the mold the result is a rather mean appearing casting. I would like to know what to do to clean this iron and to do away with this rust dirt.

AN INTERESTING FIGURE passed away this week in the person of John L. Gill, one of the pioneers of the West, who died in Columbus, Ohio, at the age of 90 years. In the year 1827 he took four six-horse wagon loads of stoves to Athens. On the trip he observed a blacksmith using coal which, on inquiry, he found to have been dug from the adjacent hills. Gill made arrangements with the blacksmith to dig sufficient coal to load the

teams on their return trip, which coal he sold on arrival at Columbus at the rate of \$15 per ton. This was the first coal ever brought to Columbus for manufacturing purposes from the Ohio Valley, and was the beginning of the immense coal industry of that region.

Gasoline Stoves.

The gasoline stoves that are being marketed this year are more attractive in construction than formerly, and now that their operation is simplified and their use is fully understood it will not be surprising if the year closes with the announcement of the same increase in sales as has been customary. The intense heat of which they are capable has been very pleasing to the always busy housewife, and their efficiency is reported and witnessed with an interest that makes the possession of a gasoline stove a mere matter of time in numberless cases. Like all apparatus of high power their misuse is capable of destruction, but modern improvement has reduced the danger to a minimum. As a farmhouse and suburban apparatus for summer use its popularity is undivided in many sections. Some discouragement has been met through the insurance companies, but liberal and up to date business companies will include the right to use gasoline stoves of approved construction in their policies. The season for their use is not so far removed that the live dealer can put off selecting his line, and the outlook is far more promising than for the past few seasons.

Brand's Catalogues.

The Brand Stove Company of Milwaukee, Wis., and 77 Lake street, Chicago, have just issued two handsome catalogues, one referring to oil and gasoline stoves, oil and gas ranges and oil heaters, while the other treats exclusively of furnaces. The goods enumerated in the first catalogue cover Brand's Famous gas range, which is made in two sizes and is constructed entirely of cast iron; Famous Junior gas stoves and hot plates with one, two and three burners; Famous oil ranges, with four 8-inch cooking holes; Famous oil cooks, with one, two and three cooking holes, in various styles; lamp stoves with one, two and three burners; Famous All-Right oil heating stoves in three styles and sizes; Famous gasoline stoves, comprising low juniors, high juniors and high juniors with step, all having individual burners, and the same styles with single generators, either with stationary, safety or lay-down tanks. It will be seen from this statement that the company are well equipped to supply the trade with hot weather cooking apparatus.

Their furnace catalogue illustrates

and describes a larger line of warm air furnaces than ever before shown by the company, to which they have added combination warm air and hot water heaters. Their furnace department has now been expanded into a specialty. The construction of the company's well-tried Wisconsin cast iron furnace is fully set forth, followed by the new construction with steel radiators, and a large number of wrought iron cylindrical flues to increase the heat radiating surface. Another new series of furnaces is named the Famous Florida. This is a base heating furnace with a steel dome and low radiator, increasing the distance traveled by the products of combustion, and securing the utmost amount of heat from the fuel burned. Other furnaces shown are the Famous Comet, with steel dome, and the Famous Magnet for wood. An illustration is given of Bigley's patent hot water heater, designed for the conversion of warm air into combination furnaces. This hot water heater is cone shaped, sits on top of the fire pot, is made of cast iron in two pieces, and presents the appearance of open pipe work, the interior being arranged with partitions between heads so as to cause reverse circulation of the water passing through the heater. It is tested to 150 pounds pressure, has two inlets and two outlets, and is intended to add to the heating capacity of a furnace with little additional expense for fuel.

Florida as a Market for Heating Stoves.

BY JEEMS.

I was down in that flowery land during what they call the "second freeze," and part of the time was domiciled in one of those lovely Southern houses filled with all the Southern appliances for keeping warm, or, at least, for keeping out the warm, and in doing the latter the house was a perfect success. No warm ever got near that house, for the air froze before it struck it, and came into the rooms in regular ice chunks. I always was, and ever will be, the lover of a good stove, and when you have got the institution glowing on a cold day, and you feel its genial warmth while the wind howls outside and the pedestrians buck along against the blast, you feel how much you are thankful to the thoughtful stove man.

I never before had such a chance to enjoy the luxury of an open fire—the pretty tile, the tasty mantel, the fluted brass trimmings and then the cheery blaze, as they called it. Great Scott! I bet I had a blaze in that chimney 40 foot high. Me and another nigger took regular watches to see that the cheery blaze was kept up. We had a dead sure thing on the blaze, but the heat we got out of it had no effect on this "second freeze," as the fire froze from its effects.

Standing with my back to this fire, and clad in a long ulster, I had to tie a sash weight to the tail of the ulster to keep it out of the blaze, the suction was so strong. How I did long for the stove around the boss' shop!

The reputation of Florida as a winter resort, free from all the rigorous accompaniments which attend the sort of weather that the North gets during the period that the stove men reap their harvest, I should imagine is rather shabby.

There ought to be a big business done in stoves through Florida next winter, for if ever a people needed them the inhabitants of this sub-tropical region do; and if a lot of hustlers started a house to house canvases and expatiated on the great advantages of the good old stove and the danger of freezing to death if they have another freeze, a tremendous business could be done. Every orange tree, or at least every three trees, ought to have a stove all ready to light when the sub-tropical winter sets in, for the truth is a sub tropical winter is a corker and not favorable to the orange crop; but with the stove attachment orange growing would be a success. The sub-tropics is the outlet for the stove surplus. Think of it! There must be a million or two of orange trees, and a

recommended; then the doctors' bills; how much each has paid and how good or bad their doctor is, &c., &c. It is so pleasant to hear people describe all their agonies and what they endure, and it is astonishing how they will prolong the narrative to make it interesting for you. It is about as amusing as the dentist when he is running a machine shop in your mouth. Then they all have their prejudices as to the healthiest districts in Florida, and I should judge by what I heard that 300 or 400 yards difference in location would kill or cure a person, according to how he struck it.

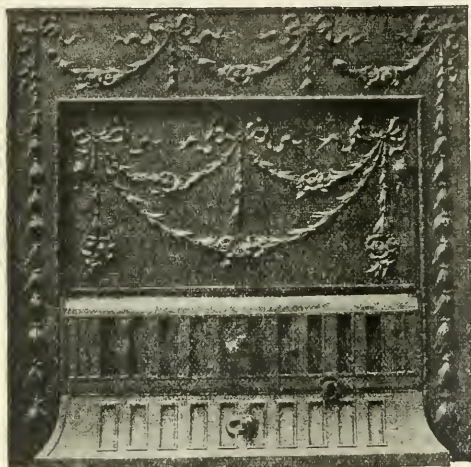
The orange fends are just as bad, for their ideas differ largely regarding this fruit and the best method of culture. As I had no disease or orange groves, and in fact don't care about either, I escaped from the crowd as much as possible, and made friends with the cook, getting points on his art when the weather was smooth.

But there is one thing to be said for Florida, and it applies to the South

a nominal price, and think of the immense Western irrigation schemes to bring land under cultivation and the cost of such projects, it is surprising that the course of empire is not more southerly. Ocean voyagers usually go in raptures at the beautiful bay of New York, and think how charming it looks as they sail up the bay. I thought so, too, when I saw the ice floating around, the hills crowned with snow and the nice snug looking houses all fixed up with good heating appliances, and in fancy I could see the people sitting around the good old stove; yes, I could imagine the family cat and the family dog dozing around and enjoying its comforts; it made one feel very jolly, and to think of giving up these good things for a winter in Florida! In the language of the minstrel, "How foolish!"

The Rockford Grate.

The Rockford Grate Company of Rockford, Ill., are offering the trade, an



The Rockford Grate.—Fig. 1.—Front View of Grate No. 203.



Fig. 2.—View Showing Construction of Shaking Grate, Brick Sides and Back, and the Double Draft Dampers Closed.

half million of people who need stoves—that's about the size of it—and there is at least a million stoves wanted. "There's millions in this scheme" for stove foundries and a big field for the inciters of public interest in them.

The sea trip from New York is a very pleasant one when it is "smooth all the way down just like the North River." When it isn't, and usually it isn't, it is not so pleasant. It is like fishing; "if you had been here yesterday you would have struck luck," so the boatmen tell you. So with the steamer—"last trip was as smooth as glass, but this is the worst we ever had." So you take the chances on the briny, but as a mine of information on diseases and oranges the Florida steamship is the place to acquire instruction. Most of the passengers are going down for their health or to look after their orange groves, and between puking, if they are seacick, they will load you up with a detailed account of their ailments or give full instruction regarding orange growing. It is really delightful to get into one of the medical groups and hear of the wonderful remedies and the cure alls that are

generally. People who will take Northern comforts and fit themselves for unpleasant weather can be as comfortable as they could wish, and while tropical agriculture may not be a sure thing (except with the stove attachment), other crops can be made. Up around Quincy and Tallahassee tobacco raising is carried out on a large scale. The Owl Cigar Company of New York have some 1800 acres of land at the former place, and are raising a fine grade of tobacco. They have a large cigar factory and heavy capital invested in the enterprise. Fuller's earth has been found by them, and is being mined and shipped North. This earth has always been imported, and no doubt exists but what there is lots of it in Florida. The climate is healthy, soil good, ground high and rolling, good water and living and land cheap in this section. Eggs 15 cents per dozen, chickens 25 cents, turkeys 75 cents each, dressed hogs 6 cents per pound, &c. Quincy has just contracted for water works, as they have an excellent quality of water. When you consider the vast quantity of well watered land that can be had for

interesting assortment of grates of rich and artistic design, all of which we understand are copyrighted. This grate has interchangeable parts, so that either a shaking or dumping grate and any frame or summer front desired can be used. The back is cast in one piece, but the top and dampers are removable. This, it is claimed, prevents cracking from intense heat, while the parts can be readily replaced if for any reason such a course should become necessary. By means of double flue chambers all difficulty with the draft is claimed to be avoided, and as the coal front is double all ashes and cinders fall through the space between them to the pit behind the ash screen. This is a feature which cannot fail to be appreciated by careful housekeepers, especially if they have had experience with grates from which the ashes were scattered over the hearth. The grate is regulated much the same as a stove, and as the designs are rich and artistic they form a pleasing addition to the appearance of the rooms in which they may be placed. In Fig. 1 of the accompanying illustrations we show what is known as the

company's No. 203, measuring 30½ inches wide and 80½ inches high. The frame is made in one piece and the back and sides are of fire brick. It has a double damper in front, a double basket front and an adjustable summer front. In Fig. 2 we present a view with the front removed, showing the construction of the shaking grate, the brick sides and back and also the double draft dampers closed. We understand the Rockford grate is offered to the trade as a decided improvement upon the old style, and one that overcomes many of the objections often urged against open grates. All the parts are fitted and put together at the factory, and each grate is boxed ready to put in position.

ODD PLATES.

A VARIETY of elegant mantels and fire places are on exhibition at the show-rooms of W. Jackson's Sons, 246 Front street, New York. Mantels are exhibited that have been specially designed for use in halls, libraries, parlors and chambers and adapted to all styles of architecture. They are made of oak, ash, maple, curly birch and some finished in white and gold. Some are shown with beveled French plate glass mirrors, and others, very handsome, are built of tile, red earthenware and terra vitrea, plain and with deep recesses above the fire place bordered with artistic wrought iron or castings of iron and brass of appropriate design. The mantels serve to show seemingly unlimited styles of fire places and grates for coal, wood and gas, some fitted with andirons and others with logs and baskets. Some of the fire places are lined castings bearing ornamental designs of conventional, artistic or special character. Others are built entirely of tile, affording an opportunity for a grace of contour and a considerable license in coloring. Onyx, Sienna and Rose Numidian marble and glass mosaics are used as borders for the fire places with splendid effect, and having ornamental bands of brass and iron. The fire baskets and portable grates are adapted in style and ornamentation to their surrounding; some lusterless, others bronzed and plated or of cast brass or wrought iron. The andirons are in themselves a fine show, wrought iron being worked into fantastic shapes and into dragons or in rugged simplicity; brass is used cast, spun and stamped, highly polished or in antique finish in different colors and sometimes gold and silver plated. The shafts are made round and square, straight and taper, plain and fluted, and of onyx and marble surmounted by wreaths, urns and various ornaments. The fenders are of equal beauty and unlimited variety. The fuel holders, hods and fire sets seem too handsome for use. The summer pieces for fire places are art castings, "A Japanese Minstrel" and "Sans Souci" being notable. The gas grates and logs make a fire place an unalloyed pleasure and are in keeping with the other lines, which make a visit to the showroom something to be undertaken by every one who is able to do so.

THE FERROSTEEL COMPANY, with office and warerooms in Cleveland and with foundry at Chagrin Falls, Ohio, have issued a rather unique pamphlet entitled "Blue Book for the Register Trade." It consists of a number of pages of varying shades of blue printed in blue ink and bound in deep blue covers with embossed side title in old gold. The matter consists of illustra-

tions and price-lists of Ferrosteel warm air registers and ventilators, numerous designs being shown covering Moorish, Byzantine and Composite Lattice patterns. All styles of registers can be supplied finished in white or black japan, electro plated in nickel, copper, bronze, silver, brass and solid brass or bronze metal. The company carry a large and well assorted stock at their warerooms, 17 and 19 Long street, Cleveland. They request that all correspondence be addressed to them at 106-108 Superior street, Cleveland, Ohio, where are located their main offices.

THE BELLAIRE STOVE COMPANY of Bellaire, Ohio, are now running their works four days a week instead of three as previously.

T. B. HUSKEY & SONS of North Berwick, Maine, are very busy getting out goods to meet the spring demand. Owing to the fire which destroyed a portion of their plant, manufacturing operations were checked to some extent, but the work of erecting the new buildings is being rapidly pushed forward and it is expected that everything will be running smoothly in a short time.

THE LEXINGTON STOVE FOUNDRY, at Lexington, Ky., resumed operations on Thursday, March 7, under the management of assignee O. W. Snyder.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., favor us with circulars illustrating their line of wrought steel ranges and also their Silver Peninsular and Bronze Peninsular ranges, the last two being entirely new constructions and brought out to meet the popular demand for satisfactory goods at low prices. They are made for burning wood and are offered the trade in a number of sizes and styles. Each stove has six boiler holes and the ornamentation is of an attractive character. The company have recently established an agency for their furnaces in the western part of the city under the management of Samuel J. Genilloz & Co., 1330 Grand River avenue, Detroit, Mich.

THE PLANT of the Cortland-Howe Ventilating Stove Company, at Cortland, N. Y., has resumed operations, after the usual shut down for repairs and inventory.

THERE is said to be some prospect that the foundry of Burdett, Smith & Co., at Troy, N. Y., will resume operations this spring. It has been idle all winter, but trade has been improving in different parts of the country, and it is now thought that the stove foundry will soon be started again.

THE STANDARD RANGE & STOVE COMPANY were formed a short time since at Terre Haute, Ind., with a capital stock of \$50,000. The meeting was held in the store of the Townley Stove Company, at which time officers and directors of the new concern were elected. The purpose of the new organization is the manufacture of stoves and ranges on a large scale. What is known as the old King plant will be utilized for a time, but subsequently the works will be enlarged, as the company own several feet of ground not yet built upon. It is also stated that if the demands of business should warrant it, a new site will be selected and a large foundry erected. The Board of Directors consists of H. P. Townley, E. J. King, M. J. Hynes, B. G. Hudnut, William Donoghue, George S. Zimmerman and S. L. Fenner. The directors then held a meeting and elected H. P. Townley president; E. J. King, vice president; M. J.

Hynes, secretary, and W. E. Donoghue, treasurer.

THE CRAIG REYNOLDS FOUNDRY COMPANY of Dayton, Ohio, and with Western branch at 82 Lake street, Chicago, Ill., have just issued an interesting publication, entitled "The Triumph Estimate Book." It is issued for the use of the trade and in the hope that it will prove of service in keeping a more systematic record of estimates on furnace work and data connected therewith. Among the opening pages we find some remarks relative to estimates and adjustments, sample blank of proposal and specification for furnace work, together with tables showing the sizes, weight, dimensions, capacities, &c., of the various kinds of Triumph heaters made by the company. Some of the pages of the book are ruled in such a way as to cover the various items necessary, while other pages are left blank for memoranda. The volume is arranged with a great deal of care and seems to meet a pressing need of the trade.

THE SPEICH STOVE REPAIR COMPANY, who were recently formed at Milwaukee, Wis., with a capital stock of \$50,000, have the following officers: President, Albert Speich; secretary and treasurer, Jesse C. Bradley. The new concern succeeded to the business formerly conducted by Albert Speich and Speich & Bradley, both of whom dealt in stove repairs and stoves. The new concern will occupy a five story double store at 130-132 West Water street, and we understand it is their intention to largely increase their facilities so as to make the company one of the largest in the country in their particular line.

THE JOLIET STOVE WORKS of Joliet, Ill., are calling the attention of the trade to Moore's air tight heater and Moore's Extra cook stove by means of prettily decorated blotting pads. These are printed in colors and carry, in addition to advertising matter relative to the goods named, a calendar for the month of March.

THE ROCKFORD GRATE COMPANY of Rockford, Ill., began business a short time since, manufacturing artistic fire place furnishings. They first turned their attention to coal grates and have already brought out quite a large line of fine grates in which many improvements have been made on the ordinary club house grate. They have just issued a neat catalogue of 16 pages illustrating the several styles thus far brought out. The company are now at work on a line of gas grates.

CHARLES NOBLE & Co., Philadelphia, are putting on the market several new ranges of handsome design and replete with modern conveniences. The Home Liberty is an elevated boiler range especially adapted to the requirements of builders. It is supplied in portable and brick set patterns with right or left hand ovens and fire boxes, with or without pipe shelf, upper and lower warming closets and attachment for heating upper rooms. The Prize Liberty is similar in most respects to the Home Liberty, but is particularly for use with a vertical boiler. The Best Liberty is another range of the same order, but designed for a brick setting. All these ranges are supplied with either five or six holes, open or closed ends, and, when required, with skirt base and feet. The firm are improving their well-known Iron King range by the introduction of a bracket reservoir, and the old style reservoir attachment is being ornamented to harmonize with the oven door.

BEARING the ever defiant rooster on its red cover, a 32 page catalogue reaches us from Sam S. Utter, 113 Beekman street, New York. It is printed in blue and the introductory is characteristic. The first 18 pages are devoted to the Game and Summer Girl lamp stoves, followed by a page on the musical line, Solo, Duet, Trio and Quartette lamp stove. Then comes the New Game cast iron cooking stove with two, three and four hole tops, heating drums and ovens, with the Bantam Game and the Parlor Game oil heaters. Several pages are devoted to the Game gas hot plates and sad iron heaters. The last pages show Sam S. Utter's patent wick tube, which is made in one piece without a seam, and give directions for using oil stoves to get the best results.

*RREEVES & SMILEY, 129 North Second street, Philadelphia, have been appointed sole selling agents for the stoves and ranges made by the Plymouth Foundry Company for the States of Pennsylvania, New Jersey, Delaware and Maryland.

A FRENCH CONSULAR REPORT from the Cape of Good Hope states that gas stoves are being largely adopted in that colony in every place where gas is available. There are about 800 now in use in Cape Town.

"A Few Natural Gas Burner Facts Worth Considering" is the title of a little pamphlet from the Hollands Mfg. Company, Erie, Pa., giving cuts and descriptions of 74 different sizes and designs of gas burners for use in cooking and heating stoves and hot air furnaces.

THE EXCELSIOR MFG. COMPANY of St. Louis, Mo., have just brought out the New Charter Oak four-hole cook stove, of attractive ornamentation and substantial construction. It is provided with wire gauze door, but the arrangement is such that it can be changed from gauze to solid door by simply closing the gauze by means of a fan shaped register or sliding plate. This scheme of construction permits the air to be admitted into or excluded from the oven at pleasure.

A. L. CANFIELD, at Pearl and Beekman streets, the New York manager of the Danville Stove & Mfg. Company, Danville, Pa., is making a display of seasonable goods in the line of Monarch gas and gasoline stoves. The Royal Monarch gasoline stove is of the cabinet style with a drop oven door and a special adaptation of the new process burner. Their No. 14 Monarch is a family stove of the single generator type, and has a special feature in a sub-flame under the generator burner. After the stove is once lighted the sub-flame can be put out, to be lit again when the regular burners are shut off. The sub-flame then consumes a small quantity of fuel, keeping the generator warm ready for lighting the burners at any time. The Royal Monarch gas stove presents a handsome appearance in a black japan body, which is brightened with heavy bands that are polished and nickel plated. The burner of this stove presents some new features similar to those, it is said, used in the construction of the central draft lamps. Another feature of the burner is the construction of the needle valve governing the supply of gas. The tapering needle point does not taper all the way to the full size of the valve rod, but tapers more sharply and ends in a shoulder. This shoulder fits up against a seat and prevents the opening around the needle point from becoming enlarged by frequent use.

RATHBONE, SARD & Co. have been running their stove works at Aurora, Ill., on full time, with a full force of hands, since March 1. Prior to that date they ran on part time with a reduced force. This resumption of activity shows considerable faith in the future.

B. W. DODSON, who was for years a prominent and very popular member of the stove trade, is now secretary and treasurer of the Geneva Washed Gravel Company, Ogden Building, 38 Clark street, Chicago.

THE DETROIT VAPOR STOVE COMPANY have been incorporated at Detroit, Mich., with a capital stock of \$150,000. Incorporators are John S. Sherman, Edwin G. Mummery and George H. Harms.

THE HEALD FARQUHAR FURNACE COMPANY have incorporated at Des Moines, Iowa, with a capital stock of \$10,000. Incorporators are W. J., A. W. and I. Heald.

WILLIAM H. SARD, vice-president of Rathbone, Sard & Co., has abandoned Chicago temporarily and will take a few weeks' vacation in Florida to recuperate after a severe struggle with the "grippe."

KIECHLE, BRENTANO & OBERDORFER, proprietors of the Southern Stove Works, at Evansville, Ind., have adjusted the labor troubles in their works and everything is again running smoothly. According to an interview with August Brentano of that firm, published in a local paper, the difficulty originated in January when the molders refused to work on a Franklin stove which they claimed was a "strike" job. All but 11 stood firm when the issue was finally presented to them to go to work on this stove or leave the premises. Non-union men were then employed, and the 11 old hands were so harassed by the strikers that they were obliged to quit. The works then ran wholly non-union. On the 4th inst. G. F. Valentine of San Francisco, vice-president of the International Molders' Union of North America, called on Mr. Brentano, and after a thorough discussion of the situation a method was found through which the differences were adjusted. Mr. Brentano says in conclusion: "The matter is now settled to the firm's satisfaction in every detail. The firm are in far better condition in regard to their rights and privilege in our works than we were before the strike occurred. We now know what we are doing. Heretofore our employees ran our business, and hereafter we will run it ourselves and to suit our own fancy and in accordance with the new management. You might add that we will have nothing to do whatever with the local union. Our contract is made solely and directly with the International Molders' Union of North America. The union men have paid all the non-union men's transportation out of the city, or taken them into the union. The union force will work for us commencing Monday morning. I engaged 50 molders to-day, including the 11 who stood by me in time of need. There is no reason why these men should not continue their work, as Mr. Valentine admitted to me that the men, our employees, alone were in the wrong."

THE FERGUS FALLS SHEET METAL WORKS have been started at Fergus Falls, Minn., by Charles Featherstone, who will manufacture the Surprise heater.

THE FULLER-WARREN STOVE COMPANY of Milwaukee held their annual meeting on the 6th inst. and elected the following Board of Directors: Walter P. Warren and G. G. Wolf, Troy; H. A. Viets, John E. Hausen, Wm. Plankinton, Francis Hinton, H. S. Haselton, Geo. L. Graves and John Johnston, Milwaukee. A satisfactory year's business was reported, taking general trade conditions into consideration.

THE NEW BUILDING which will soon be erected by the Cleveland Steel Range Company of Cleveland, Ohio, will be 50 x 192 feet and three stories in height. The main entrance will be at the corner of Detroit and State streets and constructed in the shape of an alcove. The offices will be located on the first floor of the Detroit street front, while the storerooms, laboratory, shipping and erecting rooms, together with the engine and boiler room, will occupy the remaining portion of the floor. The second and third floors will be used for manufacturing purposes. The rear of the proposed building will front on Vermont street and there will be a double door entrance on Vermont and State streets. The estimated cost of the new building is placed at from \$15,000 to \$20,000.

"THE FRIEND OF THE FAMILY" is the title of a little pamphlet which comes to hand from Buck's Stove & Range Company of St. Louis, Mo. The opening pages consist of a talk on stoves, covering their selection, use, attachments, &c. The pages then describe how to make candy of various kinds, the recipes being presented very full and complete. The illustrations and compilation are by Bert Ball.

THE PORTLAND STOVE FOUNDRY COMPANY of Portland, Maine, have just issued a very neat four page folder printed in colors and calling attention to their Atlantic hot water and warm air combination heater, which is offered the trade in numerous sizes. The device is shown in sectional view, clearly indicating the internal arrangement of parts, while the descriptive text calls attention to the leading features of merit. Illustrations of several dwellings heated by the company's system are also presented.

FRED E. LEE, manager of the estate of P. D. Beckwith, Dowagiac, Mich., writes us under date of March 5 that after a two weeks' shut down the Round Oak Stove Works resumed operations on Monday, February 25. The works have been running nearly full since that date, and it was expected by the end of the first week in March they would be turning out their usual amount of work.

THE UNION STOVE WORKS, 70 Beekman street, New York, have completed arrangements by which they are the Eastern agents of the Milwaukee Gas Stove Company, Milwaukee, Wis. They are already making a display of cooking and heating stoves. The Perfection gas ranges on their sample floor are connected with the gas supply and shown in full operation.

W. H. WHITEHEAD, president of the Chicago & Erie Stove Company of Erie, Pa., favored Chicago with a week's visit recently. Mr. Whitehead passed so many years in Chicago and enjoys such a wide circle of acquaintances who hold him in high esteem that a visit there is a perpetual round of handshaking.

TRADE REPORT.

The Iron Market.

Expecting that it would furnish the impetus for a rising tendency, manufacturers of Iron would gladly see a moderate advance in Ore and Coke. But no one wants to be the pioneer and run the risk that competitors cover later at lower prices. While the attitude of buyers of Raw Material is friendly, it is also one of uncertainty and suspicion.

Southern producers of Pig Iron have booked orders quite heavily and yet the market remains stationary with occasional soft spots. In Cincinnati two contracts, one for 12,000 tons of Pig Iron and another for 18,000 tons, were placed by Pipe foundries to cover sales of product.

Pig Iron statistics for the month of February show that production is not up to the mark reached earlier in the year. This is chiefly due to the fact that a number of furnaces are undergoing repairs and confirms the statement made some time since that the really modern plant north of the Potomac and the Ohio capable of making Iron at present prices is fully engaged.

Pig Iron.—The movement in the New York district has been light during the past week. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

The demand for Pig Iron in the Philadelphia district has been a little above the average of the past few weeks, but the supply has been in proportion, so that prices are unchanged. Makers of Pig Iron do not regard the situation with much cheerfulness, as it is found impossible to get more money for their Iron, and there is besides a very general complaint in regard to the slowness with which payments are made. Sales include all grades of Iron; the heaviest lots have been No. 2 Foundry at \$11 @ \$11.25 for Philadelphia and equivalent points, and at about \$10 for No. 2 at such points as York, Columbia, Harrisburg, &c. Schuylkill Valley buyers have also taken fair sized lots. Ordinary quotations are about as follows for Philadelphia rail deliveries, and from 3¢ to 5¢ less for water, or at points such as York, Harrisburg, &c.: Standard No. 1 Foundry X.....\$12.00 to \$12.50
Standard No. 2 Foundry X.....\$11.00 to \$11.50
No. 2 Plain.....\$10.75 to \$11.00
No. 1 Soft.....\$11.50 to \$11.75
No. 2 Soft.....\$10.75 to \$11.00

The Chicago Pig Iron market is reported as in excellent shape, every week showing a good movement in both Northern and Southern Iron. Contracts for the former are rather larger than for the latter, which, of course, is to be expected. The foundrymen who are buying the most material are the makers of specialties. Jobbing foundries are quiet. More Lake Superior Charcoal was sold during the week than for a long time. Some consumers are now disposed to

make season contracts, but they are calling only for small monthly shipments. Large consumers are still holding off. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch No. 1.....	10.25 to 10.50
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1, Soft.....	10.00 to 10.25
Southern, No. 2, Soft.....	9.50 to 9.75
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.00 to 15.25
Other Ohio Silvery.....	14.25 to 14.50

The demand for Bessemer Pig Iron has been extremely light in the Pittsburgh market during the week, and prices are showing a somewhat weaker tendency. On account of the unsettled condition of the Coke question, furnaces are not pressing the market for sales. Mill and Foundry Iron are quiet in demand and unchanged in prices. We quote as follows:

No. 1 Foundry.....	\$10.50 to \$10.65, cash.
No. 2 Foundry.....	9.65 to 9.70 "

The feature of the week in the Cincinnati Pig Iron market has been the large buying of Southern metal by Pipe works, both in the East and West, the principal orders having been secured by local agents. Several days since a contract for about 12,000 tons was placed by local manufacturers of Cast Iron Pipe, and on Monday another order for 18,000 tons was secured by representatives of Cincinnati houses. Both contracts have been entered by Southern furnaces at prices represented by inside quotations, and the deliveries extend over the next five months. The bulk of the sales has been of No. 3 Foundry and No. 2 Soft at \$6.25 and \$6.50 per ton respectively. Birmingham basis, or \$8.50 @ \$8.75 per ton; Cincinnati basis, No. 2 Foundry and No. 1 Soft at \$6.75 Birmingham, or \$9 Cincinnati. For some time past the demand for Softeners has been relatively greater than for the ordinary foundry grades, especially for No. 2 Soft, so that in a schedule of prices No. 2 Soft appears as an intermediate grade—that is, between No. 3 and No. 2 Foundry in price, but No. 2 Foundry and No. 1 Soft are regarded as upon the same level of value. The demand for No. 1 Foundry is relatively light, and it is quotable at \$7.25 Birmingham or \$9.50 Cincinnati. The contracts placed by radiator manufacturers cover about 9000 tons. In addition to the large trade noted there has been a fair inquiry from moderate sales to the general consumer. Car works have made additional purchases of 500-ton lots, and general foundries and mills have shown more disposition to buy more freely, or rather less sparingly. Taken all in all, the trade conditions are more encouraging and manufacturing lines are especially confident. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.25 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25

Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

Sales in the St. Louis market are reported as showing a slight improvement, but they still continue to run largely to quantities which will not average much over 200 and 300 ton lots. The local Pipe works are running full and are steady consumers of Pig Iron, and a noticeable increase is reported from the Stove foundries as well as a good trade from the machine shops. The demand runs largely to No. 2 Foundry and No. 1 Soft, which are quoted respectively at \$6.50 and \$6.75, f.o.b. cars Birmingham. Consumers are not disposed to anticipate their wants more than 60 days ahead and large sales are necessarily limited. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Metal Market.

Pig Tin.—The movement in wholesale prices has been narrow, not exceeding 0.25¢ @ 0.30¢. Speculation has shown less animation and nothing distinctly new in the way of incentive to operations has materialized. At intervals there were signs of weakness and of strength, but neither developed pronounced form from which "bulls" or "bears" derived any decided advantage. Business with out of town dealers and with consumers was slack during the early part of the week, but subsequently improved and involved quite the average amount of Tin all told. Prices at the close were firm on cable advices of an advance in London. Small lots of Straits Pig from store are quoted at 15¢ @ 15½¢. Arrivals during the week were moderate, but the supply at all is considerable and the general statistical position is without important change.

Copper.—Prices during the week have fallen to a still lower level. On the decline a very fair business has been done, chiefly in the form of moderate sales to home consumers. In some quarters it is asserted that the decline was due to manipulation by alleged "shorts," but this has hardly the foundation that is back of another explanation to the effect that the market suffers from heavy supplies at producing points, conservative buying by home consumers and difficulty in working export business except at lower prices than those above quoted. In point of fact the market has the appearance of being weak on its merits. Jobbers are quoting 10½¢ @ 11¢ lb for Lake Ingot in small quantities and about 9½¢ for Common Casting brands.

Sheet Copper.—Consumers are showing more inclination toward purchasing for stock. Inquiry is fairly brisk and some increase is noted in orders for Cornice Copper. Small lots of Sheet Copper from store are quoted at the list price, 14¢ @ 15¢ lb, net.

Pig Lead.—Desires have been on a very moderate scale and no improve-

ment whatever in the demand has taken place. Buyers go hardly as far as to make reasonable bids on round lots. Prices are a trifle lower and the market is weaker in tone. Retail quantities of American Pig from store are quoted at 3½¢ @ 3¼¢ lb.

Lead Pipe and Sheet.—A better feeling is reported among buyers, although the strikes in the building trades in this city have caused a temporary lull in the demand for material for spot use. The outlook in the department of Plumbers' Supplies is regarded as favorable for a good summer and spring business. Prices in this section are maintained on the list basis, namely, 5¼¢ for Pipe and 6¼¢ for Sheet, with 20 per cent. discount.

Spelter.—Buying interest has not been as good as it was during the preceding week, and the demand at present is lifeless, being mainly confined to small lots for early delivery. Western brands in small lots are quoted at 3¼¢ @ 4¢ lb from store.

Antimony.—A moderate business only has been effected. For small quantities the ruling quotations are about 8¢ for Hallett's and 9¢ for Cookson's.

Tin Plate.—Little or nothing in the way of improvement is perceptible in the condition of the market for foreign Plates. Orders from the canning trade are still much below the average for this season in the matter both of spot and forward deliveries. Other consumers, too, show as yet only a moderate inclination toward purchasing beyond the limits of their immediate needs, and dealings in spot stock, although somewhat larger in the aggregate than last week, do not rise above the commonplace. The slackness of business has induced an added keenness in competition for orders, which, together with the augmented output of the domestic works and unfavorable advices from abroad, has served to keep prices unsettled and weak. Stocks in the New York warehouses are not excessive, and the assortment is far from full.

A special London cable dispatch of March 13 to *The Iron Age* reports as follows on the British Tin Plate market: Tin Plate prices average three halfpence lower and the market is very depressed. Many makers are unable to accept such low limits. Buyers seem to be awaiting developments. The proposed scheme to control prices receiving little support has had adverse effect upon the market. Larger demand reported for Wasters for Eastern markets. Stocks at Swansea now about 239,000 boxes, a decrease of about 48,000 boxes the past week. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20 ..	8/10½ @	9/3
Siemens Cokes, IC 14 x 20 ..	9/3 @	9/6
Ternes, 20 x 28 ..	17/6 @	22/6
Charcoals, IC 14 x 20 ..	10/ @	13/

THE NEW PLANT of the Pittsburgh Reduction Company, manufacturers of pure aluminum, at Niagara Falls, N. Y., which has been under construction for some months, is about completed and is expected to be put in operation about April 1 next. At the start out the plant will have about three times the capacity for the manufacture of pure aluminum over the present plant of this concern located at New Kensington, Pa. This concern have been negotiating for some time with the United States Government for the supplying of aluminum for three new torpedo boats and they expect to secure the order.

Chicago Report.

Scrap.—A moderate trade is in progress, which is sufficient to take about all the Old Material now offering. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Malleable Cast.....	5.00	....
Store Plate (free of burn).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Plow Steel and Breaking Stock.....	4.00	....
No. 2, such as Shovels, Hoes, &c.....	3.00	....
Old Boilers—whole (iron).....	3.00	....
(Iron)—cut in single Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horseshoes.....	7.50	....
Copper Bottoms.....	6 ¢	....
Copper Clips and Heavy.....	7 ¢	....
Heavy Brass.....	6 ¢	....
Light Brass.....	5 ¢	....
Pipe Lead.....	2½ ¢	....
Tea Lead.....	2 ¢	....
Zinc.....	2½ ¢	....
Rubber.....	4 ¢	....

Anthracite.—Business is light. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	7.95	8.20
Sioux City, Iowa.....	8.00	8.25
Abbecon, S. Dak.....	6.05	6.30
Dubuque, Iowa.....	6.25	6.50
Madison, Wis.....	7.25	7.50
St. Paul, Minn.....	6.25	6.50
Burlington, Iowa.....	7.75	7.95
Des Moines, Iowa.....	6.05	6.30
Davenport, Iowa.....	7.95	8.20
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	10.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

AN ENTIRE FLOOR of the William Yerdon Factory, at Fort Plain, N. Y., is being equipped with the latest machinery for the manufacture of tin rails, which is a new industry for the place. A pail is manufactured, it is stated, in two minutes after passing through various machines. Mr. Yerdon has secured the services of Thomas McAnamy of Los Angeles, Cal., who for a number of years was superintendent of one of the largest factories of this kind on the Pacific Coast. The superintendent of the pattern making department is E. E. Beckwith of Newark, N. J., who was for several years with the A. C. Beckwith pattern making works in that city. A large force of men will be put on as soon as the factory is ready for operation.

CHARLES HOOPER & Co., Dubuque, Iowa, issue circulars calling attention to their muffle Furnaces, also their smelting Furnaces and annealing and burning Furnaces. The muffles are particularly intended for enameling work. At the end of the circular are a number of testimonial letters from those who have used these Furnaces with satisfactory results.

CONDITION OF THE

Hardware Trade.

IT IS PLEASANT to note the improvement in business which is perceptible in some of the trade centers, as this encourages the hope that with the further advance of the season there will be such a general increase in the volume of business as will bring the demand up to something like its normal volume. The indications seem to point to a more marked improvement in the South and West than in the Middle and Eastern States. While it is the general experience that the volume of business is better this year than last, it is not uncommon to hear references to the sluggishness of trade and the reluctance of merchants to buy at all freely. Stocks are certainly kept at an abnormally low point, prices show little change and the market does not as yet assume a regular and uniform tone. There is some complaint in regard to collections and credits are being scrutinized with more than the usual care.

Advices from Chicago.—Shelf Hardware exhibits decided improvement. Orders are still confined to small lots and packages are broken as much as ever, but the orders are very much more numerous. Stocks continue extremely light throughout the country, and as spring advances the demand grows heavier on the retail merchants and they are obliged to replenish more frequently. The weather has been wintry for the past week and has undoubtedly checked outdoor operations considerably, and it is therefore argued with much reason that if trade can be so good under these conditions, it must make a decided spurt as soon as actual spring weather sets in and all kinds of outdoor improvements can be undertaken. The demand for Poultry Netting has been extremely heavy for the past week, but other seasonable goods have not been moving in very large quantities. Prices show little change. Carriage Bolts are still irregular owing to conflicting quotations from manufacturers, and Screws are unsettled on account of the recent circular issued by a large company. The movement in Tinware and House Furnishing Goods has shown a notable increase during the past few days, and the dullness of February is now in a fair way to be forgotten. Taking a broad view of the Hardware situation, it is believed that the volume of business so far this year has been a distinct gain on that of last year up to the same time. Inquiries for Roofing Plates have been larger recently than at any time since last fall, and an early improvement is confidently expected.

Notes on Prices.

Wire Nails.—The volume of business is fair but not especially heavy, the trade confining their purchases to quantities sufficient to cover their early requirements. The tone of the market is not materially different from last week, but there are indications that one or two of the mills are making slight concessions in prices. The fact that jobbers are cutting the price has some effect even beyond the territory in which such cut prices are offered. With the opening of the spring and the going into effect of the new freight rates it is expected that there will be a quickening in the demand, and some are looking for a marked

strengthening in the market with a possible advance.

Advices from Chicago.—Manufacturers appear to be well satisfied with the existing situation, except only with reference to trade in this city. They state that prices are firm and a good volume of business is moving. Predictions are quite freely made of an advance in manufacturers' prices before April 1, on account of the anticipated increase in the demand as soon as actual spring weather is experienced. Jobbers have recently enjoyed a considerably better business from retail merchants, but they state that their trade in this line is very much below the volume enjoyed last year up to the corresponding time. Small lots from stock are quoted at \$1 to \$1.05, but carload lots are still sold by a few of the leading houses at the old low price, equivalent to 95 cents, Chicago.

Cut Nails.—Somewhat more business is doing in Cut Nails than a week ago. The market continues without change. Small lots from store, New York, are held at 85 to 90 cents.

Advices from Chicago.—Manufacturers have enjoyed a somewhat better business since our last report. Orders seldom run above carload lots, but these have been a little more plentiful. Jobbers sell small lots from stocks at \$1.

Barb Wire.—An increasing activity is evident, and the demand is setting in somewhat more freely. The prices at which Barb Wire is being offered by some of the jobbing houses have the effect apparently of unsettling the market to a slight extent. The outlook for the season's business is regarded as favorable.

Advices from Chicago.—Orders are increasing for shipment from factory. The movement recently has augmented very considerably. The expected increase in March is now being realized, and almost every day shows a greater demand. Some of the factories are now very busy, and managers will not be surprised if in a short time they fall behind their orders in accordance with their rules of experience. Small lots from stock are in improving demand at \$1.65 for Painted and \$2 for Galvanized.

Screws.—There has been no important change in the Screw market since our last issue. The volume of business appears to be moderate, the lower prices announced not having the effect to any marked degree of stimulating trade. Several of the manufacturers have refrained from issuing circulars announcing the revised prices, which are referred to as unprofitably low. The object of the manufacturers in adopting the new discounts was to make them represent the market, and they are adhering quite firmly to them and refuse to give extras as before.

Binder Twine.—The Binder Twine market is in a demoralized condition as far as prices are concerned. White prices are nominally based upon a quotation of 5 cents per pound for Sisal Binder Twine, it is reported that the held over or Banker's Sisal Twine has been offered at 4 cents per pound. While this price is not being met by manufacturers of new Twine, it is a leverage which shrewd buyers make use of when requesting quotations. It is understood, however, that some manufacturers are not desirous of selling Sisal Twine for less than 5 cents, although this price applies to both small and large quantities. Orders have been placed more freely for Twine during

the past two weeks than heretofore this season, although the volume of business is still small. The following quotations for Twine represent the market fairly well:

	Per pound.
Sisal.....	4½¢ to 5
Standard.....	5
Manilla.....	4½¢ to 5
Pure Manilla.....	6½¢ to 7

Comet Lawn Sprinkler.—The Comet Lawn Sprinkler, put on the market by the E. Stebbins Mfg. Company, Brightwood, Mass., and illustrated in our issue of the 23d ult., is sold to the trade at \$5, subject to a discount of 20 per cent.

Nymur Nozzles.—H. F. Neumeyer, Macungie, Pa., manufacturer of the Nymur Nozzles, a description of which was given in our columns a few weeks since, advises us that in view of the number of Nozzles sold and ordered, he has reduced the price from \$54 per gross to \$50 per gross.

Glass.—There are no encouraging features in the Glass market, demand continuing limited and prices unremunerative. Committees were appointed at the manufacturers' meeting held in Pittsburgh February 23 to investigate certain features of the Glass business and to report at the next meeting. The subject of foreign competition is receiving considerable attention in connection with the attempt of manufacturers of American Window Glass to work in harmony. It is understood that foreign producers secure advantages in freight to inland points by obtaining direct rates from Liverpool to Chicago and Minneapolis, thus laying their Glass down at those points at a less cost than Pittsburgh manufacturers are able to do. This matter, among others, is receiving the attention of the American manufacturers. It is impossible to determine the result of the movement among manufacturers, as the Glass interests are so large and diversified and as so many questions will have to be considered before any agreement can be reached.

Roofing Slate.—At a meeting held by the Bangor Roofing Slate Manufacturers' Association, at Easton, Pa., on February 28, a revised list of prices for Bangor Roofing Slate was adopted, to come into operation on April 1, 1895. The new list is as follows, per square:

Genuine No. 1 Bangor.

Size.	Price.	Size.	Price.
24 x 14	\$3.35	16 x 12	\$3.65
24 x 12	3.35	14 x 10	3.65
22 x 12	3.60	18 x 9	4.25
22 x 11	3.60	16 x 8	4.25
20 x 12	3.60	14 x 8	3.75
20 x 10	4.00	14 x 7	3.50
18 x 10	4.00	12 x 8	3.50
16 x 10	4.00	12 x 7	3.25
18 x 12	3.65	12 x 6	3.25

Genuine No. 1 Ribbon.

Size.	Price.	Size.	Price.
24 x 12	\$2.75	14 x 10	\$3.00
24 x 12	3.00	14 x 8	3.00
22 x 11	3.00	18 x 9	3.25
20 x 12	3.00	16 x 10	3.25
20 x 10	3.00	16 x 8	3.25
18 x 10	3.00		

Terms: Acceptance at 60 days from date of shipment, or 2% for cash. All freight charges are based on 650 lb to the square. In less than carload lots the cost per square for freight is about double the cost of the carload lots.

John Galt & Son, Postal Telegraph Building, Broadway, New York, forward us the following revised price-list for Albion Vein Roofing Slate at quarry:

Size.	Price.	Size.	Price.
24 x 14	\$3.25	16 x 10	\$3.85
24 x 12	3.25	16 x 9	3.85
22 x 12	3.45	16 x 8	3.85
22 x 11	3.45	14 x 10	3.50
20 x 12	3.45	14 x 8	3.40
20 x 10	3.85	14 x 7	3.30
18 x 12	3.50	12 x 8	3.25
18 x 10	3.85	12 x 7	3.25
16 x 12	3.50	12 x 6	3.25

Block Tin Pipe.—A reduction has been made by the manufacturers in the list price of Block Tin Pipe from 30¢ to 25¢ $\frac{1}{2}$ lb, with the customary discount of 20%.

White Lead.—Business has been more active and the market shows somewhat improved tone. Competition is not lifeless by any means, nor have jobbers ceased to make special rates when by so doing the sale of more profitable goods is expedited; but extreme lowest rates recently made by some outside manufacturers are not duplicated and more discrimination is made by jobbers in the matter of concessions. The recognized leading brands of American Lead in Oil are quoted in retail quantities at 5½¢ to 5½¢ $\frac{1}{2}$ lb. English is selling in small quantities only as some few brands may be wanted for some special purposes. German is finding very limited sale and importers' prices are without change.

Red Lead.—Foreign brands, the cheaper grades particularly, have been meeting with somewhat better sale, chiefly in fair sized lots for immediate delivery. The movement has served to steady prices somewhat, without, however, causing any advance over late quotations. Domestic product remains without change as to prices and is finding only routine sale. The jobbing price for moderate sized lots is about 5½¢ $\frac{1}{2}$ lb.

Old Metals.—Business all told has been only moderate, but an improvement in the volume of inquiry indicates a better feeling among consumers of this class of material. Scrap Iron has shown a more active movement during the week, but supplies are sufficiently abundant to prevent any advance in prices, which continue low for all classes of Old Metals. The following quotations represent about the current rates paid by dealers in this city:

Heavy Copper.....	$\frac{1}{2}$ lb 7 ¢
Light and Tinner's Cover.....	$\frac{1}{2}$ lb 6½¢
Heavy Brass.....	$\frac{1}{2}$ lb 4½¢
Light Brass.....	$\frac{1}{2}$ lb 3½¢
Lead.....	$\frac{1}{2}$ lb 2½¢
Tea Lead.....	$\frac{1}{2}$ lb 2½¢
Zinc.....	$\frac{1}{2}$ lb 2½¢
No. 1 Pewter.....	$\frac{1}{2}$ lb 5½¢
No. 2 Pewter.....	$\frac{1}{2}$ lb 5½¢
Wrought Scrap Iron, $\frac{1}{2}$ gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	$\frac{1}{2}$ gross ton..... 7.50 @ 8.00
Stove Plate Scrap.....	$\frac{1}{2}$ gross ton..... 5.50
Burnt Iron.....	$\frac{1}{2}$ gross ton..... 3.00

Old Rags, Paper, &c.—Business is spasmodic, and the call for Paper stock irregular. Dealers' purchasing prices, New York delivery, are approximately as follows:

No. 1 White Rags.....	$\frac{1}{2}$ lb 3 ¢ @ 3½¢
No. 2 White Rags.....	$\frac{1}{2}$ lb 2½¢ @ 2½¢
Mixed Rags.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Blues and 3ds.....	$\frac{1}{2}$ lb 1½¢ @ 1½¢
Hard Sized White Shavings.....	$\frac{1}{2}$ lb 2½¢ @ 2½¢
No. 1 White Book Shavings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
No. 2 White Book Shavings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Light Book Shavings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
No. 1 Mixed Shavings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
No. 2 Mixed Shavings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
No. 1 Printed Books.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Ordinary Mixed Books.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Newspapers.....	$\frac{1}{2}$ lb 2½¢ @ 2½¢
No. 1 Manila Paper.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
No. 2 Manila Paper.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Bogus Paper.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Common Paper.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Straw Chips.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢
Binders' Clippings.....	$\frac{1}{2}$ lb 1 ¢ @ 1 ¢

Jute Butts.....	lb 1½ @ 13¢	
No. 1 Jute Bagging.....	lb 1 @ 14¢	
Mixed Bagging.....	lb ¾ @ 1¢	
No. 2 Bagging.....	lb ¾ @ 1¢	
Hemp Twine.....	lb 2 @ 2¼¢	
Manila Rope.....	lb 2 @ 2¼¢	
Jute Rope.....	lb 1½ @ 12¢	
Mixed Rope.....	lb ¾ @ 12¢	

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery.

Car Springs, ton lots, ½ lb.....	\$.03½ @ .04
Rubber Shoes, carloads, delivered at factory, ½ lb.....	@ .05½
Rubber Shoes, less than carloads, ½ lb.....	@ .04½
White Wringer Rolls, ½ lb.....	@ .03½
White Syringes, ½ lb.....	@ .03½

Trade Notes.

THE 1895 CATALOGUE Issued by Wallace & Sons, 29 Chambers street, New York, is a well printed pamphlet of 80 odd pages. The brass and copper rolling and wire mills of the company are at Ansonia, Conn., and a general view of the works forms the frontispiece of the publication. A view is also shown of their New York warehouse, this being followed by an alphabetical index of the contents. The first goods are Sheet Brass, then come German Silver Wire, Brass and Copper Wire, Plating machines, Sheet and Bolt Copper, Cornice Copper, Copper Bottoms, Nails and Tacks. A variety of Soldering Coppers are shown, known as the Star brand, and particular mention is made that they are hand forged and not cast. Rivets and Burrs and Tubing follow, the tables of Tubing giving all particulars of both the brass and copper. Ferrules, Chains, Snaps, Brass and Zinc Stair Plates, Hinges and Checks come next; then a varied assortment of fancy Brass Borders, Oilers, Wire Cloth, perforated Brass and Copper, Lanterns, Lamps, Burners are noted. The final pages of the catalogue are given up to tables showing the difference in wire gauges; also tables of weights and dimensions of Copper and Brass Wire, weights of Sheet Copper, tables of areas, circumferences, diameter of circles and other tables of general interest.

THE GRECIAN METAL POLISH COMPANY is the name of a concern recently organized in Kingston, N. Y., for the manufacture of a liquid Polish which is said to be excellent for cleaning and polishing metals. Luke R. Ford is president of the company.

WM. J. GORDON, 218 New street, Philadelphia, is running his works at their fullest capacity. He reports that the orders on hand for his specialties are sufficient to keep his shop full for sometime. He has just issued a 20-page catalogue, of convenient size, covering his line of special machinery for the manufacture of Tin and Sheet Iron Ware and Can Body Machines. Especial prominence is given to the Gordon Patent Automatic Can Body Power Seaming Machine, which it is claimed will seam and deliver at one operation, at the rate of 10,000 to 20,000 can bodies in ten hours, and are adapted for seaming the bodies of fruit, paint, lard, spice, baking powder, snuff and lye cans, and a large variety of other articles. Other machines shown are a Single Action Power Press, Combination Power Press, Double Action Power Drawing Press, latest improved Drawing Power Press and an Edge Curling Machine, all patented.

A FIRE which occurred in Detroit, Mich., on March 8, destroyed a large

building occupied, along with other manufacturing firms, by the Detroit Stamping Company and Wagner & Ernewein, manufacturers of tinware. The total loss is estimated at about \$90,000.

THE ALLEN & ACKLEY ANTI-RUST JAPAN MFG COMPANY are one of the rising enterprises of Cincinnati, Ohio. The company's works are reported to be in active operation filling orders for their specialty, a preparation which is claimed to prevent the corrosion caused by the action of salt air and salt water on metals exposed to their influence. A recent government test of metal plates coated with this composition resulted in a very favorable report being made in regard to it by the navy officials who conducted the trial.

THE PLANT of the Field Force Pump Company, Lockport, N. Y., was destroyed by fire on March 8. The loss is estimated at \$25,000; insurance about \$12,000. About \$3000 worth of new machinery had been put into the building the day before. The fire is supposed to have been of incendiary origin.

THE F. F. ADAMS WRINGER WORKS of Erie, Pa., which are a branch of the American Wringer Company, will be dismantled in the course of two or three months. The machinery will be divided between the works of the company in Auburn, N. Y., and Woonsocket, R. I. The works to be dismantled give employment to 130. The annual payroll is about \$60,000. The capacity of the American Wringer Company will remain as large as hitherto by increasing the business in Auburn and Woonsocket.

THE ESTEY WIRE WORKS COMPANY have been incorporated, with a capital of \$25,000. They will continue the business formerly conducted under the style of W. B. Estey at 65 Fulton street, New York. Mr. Estey, Cornelius P. McGuire, John C. Hessler and W. O. Chapmen are interested in the new company.

THE lower foundry of R. D. Wood & Co., at Melville, N. J., has resumed operations.

F. I. EVERETT has been engaged by Hibbard, Spencer, Bartlett & Co. of Chicago to represent them in Northern and Central California during 1895. Mr. Everett formerly represented the Huntgring Hopkins Company of San Francisco.

THE HYDRO CARBON BURNER COMPANY have been incorporated at Kansas City, Mo., with a capital stock of \$100,000, for the purpose of manufacturing a vapor burning device.

JAMES E. SALTER of Philadelphia. Jawood Lukens, A. L. Murphy and Jesse L. Heywood of Conshohockee, and Lewis N. Lukens of New York, have organized the Conshohocken Galvanizing Company. The officers are: President, James E. Salter; treasurer, James E. Salter; secretary, Jesse L. Heywood. The company were organized for the purpose of galvanizing, leading and tinning metals. Their principal business will be galvanizing pipe. A part of the buildings of the Tube Company, Conshohocken, will be used for the present for the tanks and other necessary apparatus.

The city of Anderson, Ind., has let a contract for the erection of a garbage crematory at a cost of about \$6000.

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THE METAL WORKER.

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A Blow at Eight-Hour Laws.

The Supreme Court of Illinois has decided unanimously that the eight-hour law for women which was enacted in 1893 by the Legislature of that State is unconstitutional. The act expressly prohibits women from working in any manufacturing establishment more than eight hours in any one day. The court holds that a woman has the right to contract to work as many hours in a day or a week as she may see proper. The mere fact of sex does not justify the law making power to restrict the right of any person to dispose of her labor as she sees fit. But the decision goes further than this and lays down the broad principle that an act which abridges the freedom of contract between workman and employer in a lawful occupation is unconstitutional. In far-reaching results this decision is regarded as exceedingly important. It is stated to be the first decision in the United States against eight-hour laws, and thus presents a new obstacle in the path of the movement for shorter hours. Labor is held to be property and the laborer is declared to have the same right to sell his labor and to contract with reference thereto as has any other property owner. The declaration that a legislature is powerless under the State constitution (which conforms on this point to that of the United States) to interfere with the freedom of contract, strikes at all enactments which have been made for the purpose of shortening the hours of labor. It therefore blasts the hopes of those labor reformers who seek to bring about a new order of things through legislation. They will have to work in another direction. Much progress has been made in the creation of a strong public sentiment in favor of shorter hours of labor, and the movement seems destined to continue to grow in strength. But the short cut through

an act of legislature has been clearly shown by this decision not to be feasible.

Displacing Planished Iron for Locomotive Jackets.

The economies forced upon railroad companies by their reduced earnings are leading to some remarkable changes. One of these is the substitution of cheaper sheet iron for the planished iron used as locomotive jackets from time immemorial. The cheap sheet iron is either japanned or painted. Not only is an important saving thus effected in the first cost of the jacket, but its subsequent care is much less expensive. Planished iron requires constant attention, being frequently oiled and rubbed, taking much of the fireman's time. The japanned or painted jacket falls to the care of the wipers or hostlers in the round houses. Numerous Western railroad companies have made the change on freight engines, and some very prominent systems are now extending it to their passenger locomotives. A heavy burden was taken from firemen's shoulders when the extensive use of brass ornamentation on locomotives was abandoned, and this later step is in the same line, but the prime consideration is not the diminution of firemen's labors, but economy in the cost of maintenance. An important outlet for the production of planished sheet iron is thus being seriously curtailed.

Nikola Tesla's Misfortune.

There is something singularly regrettable, and even pathetic, about the misfortune that has recently overtaken Nikola Tesla, the electrician, in the destruction by fire of all the mechanical instruments and scientific apparatus in his experimental laboratory, which it had taken him nearly half his lifetime to perfect. It is a loss which cannot be estimated in dollars and cents, and one, moreover, which will be felt in a measure by the entire scientific world, in which Tesla holds so high a place. The wiping out at one sweep of the work of years is a blow which must naturally strain the fortitude of a man to the breaking point. As parallel misfortunes two well-known historical incidents come to mind. The destruction by his pet dog of the sheets containing the result of precious calculations and investigations to which Sir Isaac Newton had devoted more than two years of labor, and the crushing loss which befell Thomas Carlyle in the burning by an ignorant maid servant of the manuscript of his "History of the French Revolution," lent by him to his friend,

John Stuart Mill, are cases in point. Both losses were borne with the fortitude which characterized those great men. Newton set to work to travel afresh over the old ground, and regained all he had lost, and more, in the pursuit. The later-born philosopher rewrote his famous history from memory, and declared at the end that it was vastly superior to the original. So the result may be in the case of Tesla.

The Work of Reconstruction.

Nikola Tesla has youth in his favor and is credited with the possession of a full share of the qualities of grit and persistence which are inseparable from the best kind of genius. He has, too, the advantage of beginning over again with a full knowledge of all his previous steps and processes. Provided health and life are spared, we can, therefore, look to him with confidence for much more wonderful work in the field of electrical research which he has made his own. The loss of time which will inevitably occur before the special instruments necessary to his work can be replaced, and the results of former experiments be recovered, is, however, to be regarded as a calamity, coming just at a time when Tesla was apparently so near perfecting his discovery of the means of transmitting electricity without a wire, not to mention the other important investigations on which he is engaged. He commands universal sympathy in his present misfortune, and this alone should prove a stimulus in the arduous work of reconstruction which now lies before him.

The subject of the removal of New York City's garbage is still an open question. Notwithstanding the investigations of the special commission sent out last year by Mayor Gilroy for the purpose of determining the best systems followed in other cities, the adoption of a plan which will be entirely effective under the conditions existing in New York seems to be as difficult of solution as ever. At any rate, nothing definite has yet been done in the matter. The outrageous practice of dumping the city's refuse into the sea, which was strongly condemned in the report rendered by the special commission, is still being continued.

Plans have been filed with the Board of Port Wardens, in Philadelphia, by the American Sugar Refining Company for an iron pier 548 feet in length by 75 feet in width, to be built on the Delaware River front, to take the place of three old piers now existing between South and Bainbridge streets. This will be by far the finest pier on the river.

The Brosnan Molding Machine.

In this molding machine provision is made for drawing the pattern by cam motion. A simple operation by hand or power communicates a partial revolution which raises the pattern, and after the sand is applied and compressed, a proper motion of the cam shaft in the opposite direction draws the pattern down from the stripping plate. A positive stop arrests the revolution at the right point when the pattern is up. The arrangement holds the pattern plate alternately at the respective ends of its motion first with the pattern up and then with it down without requiring any fastenings.

The frame A is provided with vertical ways or guides A', which receive long, straight parallel arms B', rigidly bolted to and extending down from a rising and sinking table or pattern plate, B, on which the pattern M is secured. A small pinion, C, is mounted on a fixed stud, A², supported on the framing A, and by means of a light fly wheel, C', and a crank handle, C², is turned at will in either direction. The cam shaft D carries the eccentric cams D' D' of equal size and similarly set on the shaft. A large gear, D², on one end of this shaft is engaged by the pinion C. In the adjustable and exchangeable stripping plate E engage T-headed screws E', which extend downward through holes in the frame. They are stiffly set by means of the nuts E², E³, E⁴.

The under face of the pattern plate B presents nicely finished surfaces adapted to receive the action of the eccentric cams D'. By giving the crank C² a few strong turns in one direction, the cam shaft is partially revolved, and the pattern plate B is raised to the required position, protruding the pattern M to the required extent through the carefully executed aperture in the stripping plate, and by means of the long straight guide arms B' held firmly against tilting. The flask, not shown, is applied and the sand introduced, rammed and struck, by hand or by machinery, in any ordinary or suitable manner. Now the operator turns the crank C² a few revolutions in the opposite direction, with the effect to lower the pattern plate and its attachments, including the pattern M. The eccentric form of the cam and the fact that the crank C² is started from a state of rest insure that the descending motion of the pattern shall be slow at the commencement. The guides or vertical ways A' steady the movement, so that there is no trembling or irregularity laterally, and the pattern is drawn smoothly out of the sand, the first part of the motion being slow and the later portion of the descending movement rapid. A projection, D³, is cast in the required position on one side of each cam.

The stops B² are fixed in the required positions on the under face of the pattern plate B. When the cam shaft has been sufficiently rotated to bring the cams into their highest position the projections D³ strike the stops B² and insure that the motion is arrested at that point.

A grooved pulley, D⁴, is keyed on the end of the shaft D, and carries a chain, G, by which a sufficiently heavy weight, H, is suspended. The force thus received tends to turn the cam shaft in the direction to lift the pattern plate and its attachments. The weight of H should be less than is required to balance the load when the eccentric cams

are at their mid height, but it is more than sufficient to lift the load when the cams are quite up. The arrangement offers little friction, and allows the attendant to turn the crank with ease alternately in opposite directions, as required, and insures that the pattern plate shall be held reliably without

when the parts are in that position. This machine is the design of M. J. Brosnan of 518 Henry street, Brooklyn, N. Y.

The American makers of oilcloth are about combining because of in-

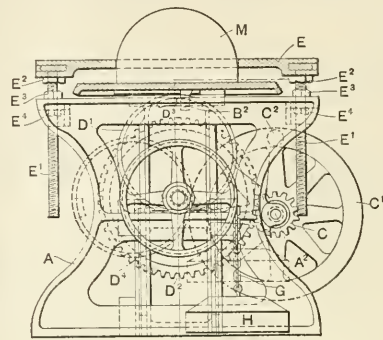


Fig. 1.—Sectional End Elevation.

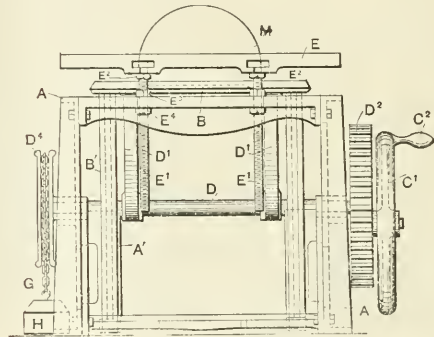


Fig. 2.—Side Elevation.

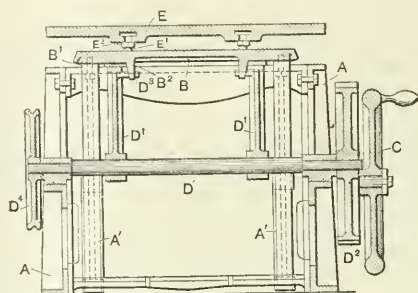


Fig. 3.—Machine with Patterns Removed.

THE BROSAN MOLDING MACHINE.

other fastening at the two ends of its motion respectively. When it is up it will be held up by reason of the fact that the eccentric cams are on their centers, and the gravity of the counter-balance weight is of full effect, and when it is down it will remain down by reason of the fact that the counter-balance weight is not sufficient to overcome the gravity of the plate and its attachments in addition to the friction

creased competition and the reduction of tariff duty. A corporation having a capital stock of over \$3,000,000 is being formed for this purpose.

The promoters of the proposed tunnel under the channel between England and France have announced their abandonment of the project owing to the opposition of the Government and the military authorities of Great Britain.

The Richards Molding Machines.

We here illustrate two forms of molding machines designed by Willard F. Richards of Buffalo, N. Y. Mr. Richards furnished the designs from which were built the four large molding machines now successfully in operation at the works of the Westinghouse Air Brake Company, Pittsburgh. Two of these machines turn out 265 complete molds per day, doing the work of 26 molders. The machine shown in Figs. 1 and 2 contains an abutment or stationary ramming block, a table for the flask to be rammed, arranged underneath the block, and a follower whereby the flask is moved toward the block for ramming. Projecting from the base A of the machine are two standards, $A^1 A^2$, connected at their upper ends by a cross piece, A^3 . The horizontal flask supporting table B turns on the standard A^1 , and consists of four upright rectangular casings, B^1 , as shown in Fig. 2. These casings are carried by a central hub, as sleeve B^2 , journaled on a fixed column, C, which surrounds the standard. The hub is supported on the base by a ball bearing, d . A horizontal follower, E, is arranged to move vertically in each chamber, B^1 , and is provided on its under side with an actuating rod, e . Each chamber is open at its upper end, and formed in its lower end with an opening for the passage of the follower rod. The follower of each chamber is guided on upright rails g , arranged in the corners of the chamber and fitting into angular guides g' . Open rectangular plates H rest upon pins h , projecting above the upper edges of the chambers, and i are the usual stripping plates. The pattern J is secured to the upper side of the follower, and the half-flask K rests upon the stripping plate i .

The stationary ramming block L is secure to the under side of the cross piece d^3 . Below the table B is the upright actuating cylinder M, the piston rod m' passing through the stuffing box of the cylinder and having its upper end located in the circular path of travel of the rods of the several followers E. The upward movement of the piston rod can thus be imparted to the follower rod standing above it. The piston is operated by steam or compressed air admitted through the pipe n . Each follower is provided with a pair of bell crank levers, o , for retarding its descent in withdrawing the pattern from the mold. These levers are mounted on horizontal pivots secured to a fixed upright plate arranged within the chamber of the follower. The upper arms of these levers bear loosely against the under side of the follower and are provided at their ends with bearing rollers for reducing the friction. The lower vertical arms of the levers are connected by links q with a cross head, Q, which moves in radial guides q^2 arranged within the chamber below the follower. The radial slides R are arranged between the guides q^2 and bear loosely with their rear ends against the inner ends of radial adjusting screws or bolts q^2 arranged in the cross head Q, so that the movement of the slide is imparted to the cross head, and *vice versa*. The inner ends of the several slides pass through openings formed in the adjacent walls of the chambers B^1 and are provided with anti-friction rollers r which bear against the face of a stationary horizontal cam, S, secured to the column C, the adjacent portion of the hub of the rotary table being recessed or cut away to clear this cam. The slides R

are each provided with a longitudinal slot, r' , for the passage of the follower rods.

The wide, concentric portion of the cam S is made of such a radius that when a slide bears against such wide portion the slide is in its outermost position, and the upper arms of the bell crank levers connected with the slide stand in a substantially horizontal position, so as to support the follower rest-

position for stripping the pattern on that side of the machine only.

The rotary table is locked in place, after bringing one of the followers under the ramming block. A spring catch operated by a treadle, T, is employed for this purpose.

In the operation of the machine, when the rotary table is turned so that one of the followers E stands under the ramming block, the slide R co-operat-

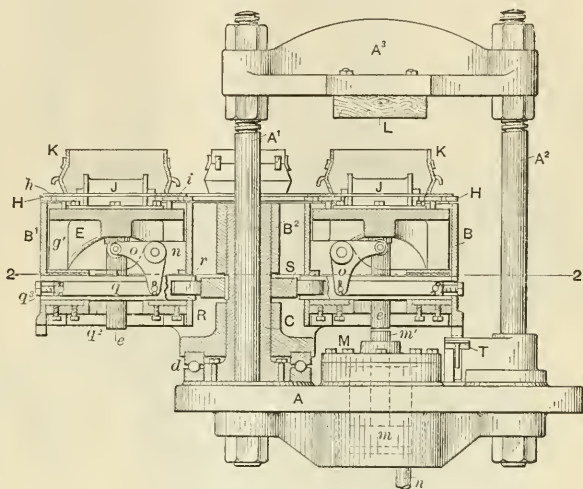


Fig. 1.—Sectional Elevation.

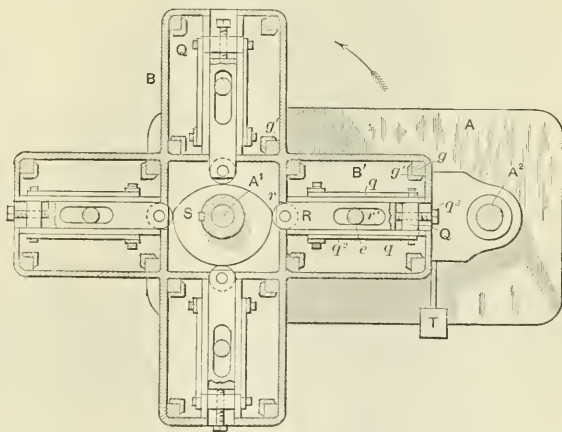


Fig. 2.—Sectional Plan on Line 2 2 of Fig. 1.

THE RICHARDS MOLDING MACHINES.

ing thereon in the normal position shown in Fig. 1. The narrow portion of the cam is made of such a radius that when a slide rides over the same it is allowed to move inwardly under the weight of the follower exerted on the slide through the bell crank levers and the cross head Q, thereby permitting the follower to descend sufficiently to withdraw the pattern from the mold. The narrow portion of the cam is preferably arranged toward the rear side of the machine, as shown, so that the followers are allowed to descend to the

lower end of the follower rod, moving the

follower, together with the superposed supporting frame, the stripping plate and the flask, toward the ramming block, thereby forcing the sand in the flask against the ramming block and packing

position of the parts the frame which supports the stripping plate and half flask rests upon the pins *h*. The rotary table is now unlocked and given a quarter turn in the direction of the arrow in

inward and the follower with the pattern attached thereto to descend to its lowest position, thereby withdrawing the pattern from the flask and completing the half mold. The depressed follower remains in this position until the rotary table is again shifted for presenting another unrammed flask to the ramming block, when it is again raised to its normal position by its slide riding over the wide portion of the cam *S* and swinging the bell crank levers into the position shown in Fig. 1. The flasks on the several followers are in this manner successively presented to the ramming block and rammed, and are then moved aside for withdrawing the pattern from the mold.

The machine shown in Figs. 3 and 4 is similar in its general arrangement to the one just described. In each of the chambers *B'* is placed a follower, *E*, whose rod *e* is actuated by the piston rod *l* of the cylinder *L*. The follower of each chamber is guided on upright rails *f*, Fig. 4, placed in the corners of the chamber and fitting into the angular guides *f'*. The rails are adjustable by means of the bolts *f''*. The supporting plates *G* rest upon pins *g*, and the stripping plates are secured to the upper side of the supporting plates. The arrangement of the pattern *I*, the half flask *J* and the stationary ramming block *K* will be understood from the drawings, as will also the method of supporting the platforms so they may be turned around the standard *A'*. In each of the chambers *B'* are arranged a pair of upright hydraulic cylinders, *N*, *N*, for retarding the descent of the follower after ramming the sand in the flask. These cylinders are located on opposite sides of the follower rod and in each cylinder is arranged a piston, *n*, the rod *n'* of which extends through the upper head of the cylinder, and is adapted to bear loosely with its upper end against the under side of the follower, so as to resist the downward movement of the latter, but permit it to move upward out of contact with the rods of the plungers. Formed in the hub of the rotary table *B* is an annular inlet chamber, *O*, with which the supply passage formed in the column *C* communicates. The lower end of this passage is connected with the pipe *n'*.

Each hydraulic cylinder is provided at its lower end with a combined induction and eduction pipe, *q*, and the pipes of the two cylinders of the same chamber communicate with a main pipe, *q'*, which is connected with the annular inlet chamber *O*. Each of the main pipes *q'* is provided with a three-way valve, *R*, for controlling the passage of the water to and from the hydraulic cylinders. To each of these three-way cocks is connected an outlet or waste pipe, *r*. The ways of each cock are so arranged that upon turning its plug in one direction the main pipe *q'* is placed in communication with the annular inlet chamber *O* and the waste pipe *r* is closed, while upon turning the plug in the opposite direction communication is established between the main pipe and the waste pipe and cut off between the main pipe and the inlet chamber.

The stop cocks are automatically controlled by the stationary cam *T* fixed to the standard *A'*.

The smallest radius of the cam is arranged toward the rear side of the machine, so that when the arm of a stop cock rides over such narrow portion of the cam, it is caused to move inward under the pressure of its spring and turn the plug of such stop cock in the proper direction to place the cor-

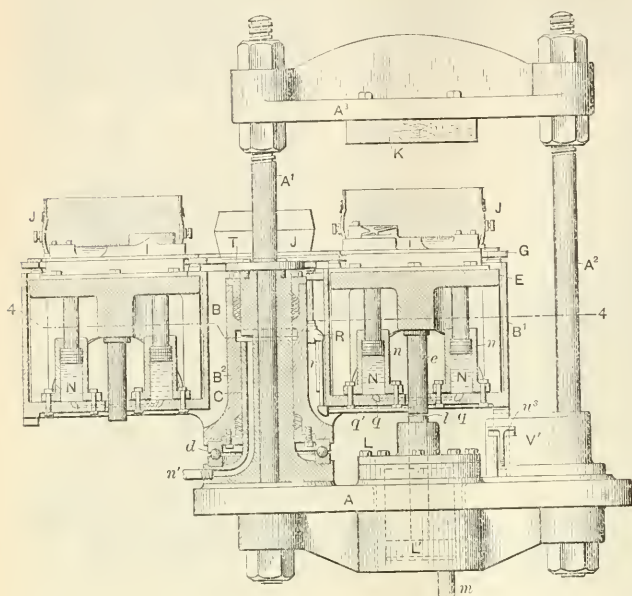


Fig. 3.—Sectional Elevation.

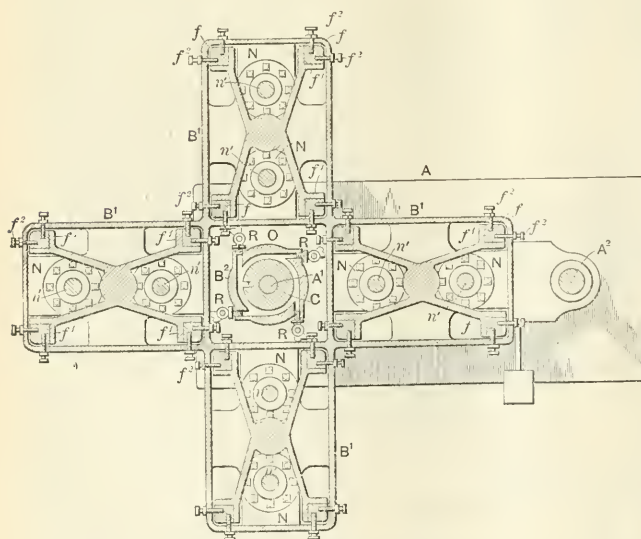


Fig. 4.—Sectional Plan on Line 4 4 of Fig. 3.

THE RICHARDS MOLDING MACHINES.

it around the pattern. Upon now allowing the steam to exhaust from the actuating cylinder, the follower with the superposed parts descends to the position shown in Fig. 1, when its further descent is prevented by the upper arms of the elbow levers *e*. In this

Fig. 2, so as to bring the partially lowered follower on the rear side of the machine and the next follower under the ramming block. This quarter turn of the table brings the side of the follower opposite the narrow portion of the cam *S*, allowing the latter to move

responding hydraulic cylinders in communication with the waste pipe *r* of the cock, thereby allowing the water to escape from the cylinders and permitting their plungers and the follower and superposed parts to descend by gravity. The portions of the cam, which face the front and sides of the machine are concentric with the axis of the rotary table, and their radius is sufficiently large to retain the actuating arms of the opposing stop cocks in the proper position to cut off communication between the waste pipes of such cocks and the corresponding hydraulic cylinders, and establish communication between the latter and the inlet chamber *O*. By this arrangement, only the stop cock of the chamber standing on the rear side of the machine is opened so as to allow the follower to descend, while the cocks of the remaining three chambers are kept closed, so as to prevent the descent of their followers.

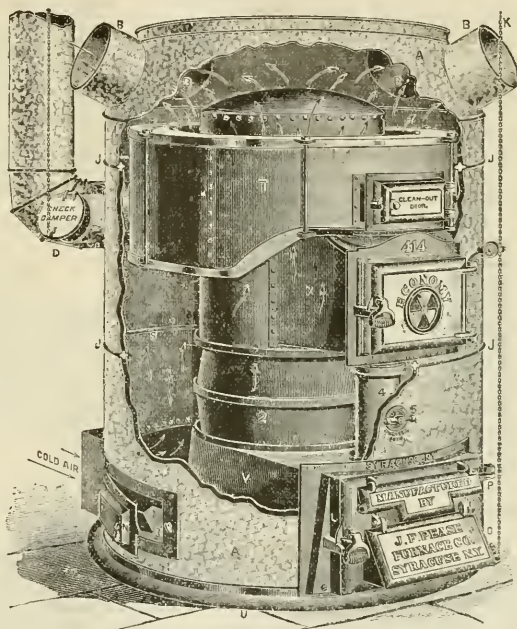
When the rotary table is turned so that one of the followers *E* stands under the ramming block, the stop cock controlling the passage of the water to the hydraulic cylinders *N* of such follower allows the water to enter the cylinders, and the plungers of the latter are therefore raised and caused to support the follower in the position shown in Fig. 3. In this position the follower is nearly flush with the upper edge of its chamber, the pattern secured thereto projects through the opening in the stripping plate and the supporting frame *G* of the latter, and the half flask rests upon the stripping plate, the flask having been previously filled with sand in the usual manner. Upon admitting steam to the actuating cylinder the piston in the latter rises, and, striking the lower end of the follower rod, moves the follower, together with the superposed supporting frame, the stripping plate, the pattern and the flask, toward the ramming block, thereby forcing the sand in the flask against the ramming block and compacting it around the pattern. Upon allowing the steam to exhaust from the actuating cylinder the follower, with the superposed parts, descends to the position shown in Fig. 1, when its further descent is arrested by the rods of the elevated plunger *n*. In this position of the parts, the frame which supports the stripping plate and half flask rests upon the pins of the chamber *B*. The table is now unlocked by depressing its foot lever *u* and is given a quarter turn so as to bring the partially lowered follower on the rear side of the machine and the next follower under the ramming block. This quarter turn of the table causes the stop cock *R* of the first mentioned follower to be turned in the proper direction to allow the water to escape from the hydraulic cylinders of said follower, and the latter now descends slowly by gravity, thereby withdrawing the pattern from the half flask and completing the half mold. The depressed follower remains in this position until the rotary table is again shifted to bring another unrammed flask under the ramming block, when its stop cock is again opened by its actuating arm riding over the wide portion of the cam and the follower is raised to the position shown in Fig. 1 by the water entering its hydraulic cylinders *N* and elevating the plungers in the latter. The several followers are thus successively brought under the ramming block and raised for ramming the superposed flask.

a suit brought against them by Angus Smith and others to set aside the certifications of lands made over to the canal company by the State of Michigan as a grant in compensation for the construction of certain public works. The property affected amounts to 68 647 acres, and includes a tract of iron lands in the Gogebic range.

The 1895 Pattern Economy Furnace.

The accompanying illustration shows the 1895 Pattern Economy furnace, brought out by the J. F. Pease Furnace Company, Syracuse, N. Y. The casing is shown broken away, revealing the internal construction and illustrating the principal features of this new form of furnace. It is specially designed for use in low cellars and is constructed to

opened. The bottom radiator is of ogee form, which reduces the friction in the air circulation and secures a larger circulation up between the radiator and chamber. The smoke pipe *C* is connected to the rear portion of the radiator directly opposite the entrance. The check damper *D*, located on the smoke pipe, is regulated by a chain which runs to any room from which it may be desired to control the furnace. The lift draft door *O* on the ash pit door *L* is likewise regulated. The McClave *T* grate, hollow bar revolving grate or anti-clinker grate can be used as desired. In describing the operation of this furnace the manufacturers point out that the products of combustion ascend into and fill the steel chamber *T*, and the smoke and gases pass through the opening at the top of the feed chute *X*, which is somewhat higher



The 1895 Economy Furnace.

burn either hard or soft coal or coke. The principles of construction and operation are similar to those of the other furnaces made by the firm, the casing, however, being 9 to 12 inches lower according to size, while the castings of the heater are made somewhat lighter, though the steel portions are kept full weight. The furnace is therefore not quite as heavy as the regular style and is sold at a lower price. The casing is provided with an inside lining of tin to prevent waste of heat. The sides of the steel combustion chamber *T* are constructed of No. 12 gauge plate, the head and top being of No. 10. The fire pot is made in two sections with cup joints, the combustion chamber resting in a cup joint on top of the second section. The dome is surrounded by a single steel plate radiator the sides of which are made from No. 18 steel. This is securely connected to the inclined top of the feed chute *X* by cementing this made, it is pointed out, prevents any escape of gas or smoke into the cellar when the door is

than the opening of the feed door, and circulate through the radiator, the products of combustion finally escaping through the smoke pipe *C*. It is mentioned that great care is exercised in the construction of the furnace to make it absolutely gas tight, while the escape of dust through the ash pit door when shaking the grate is prevented by the use of the patent dust pipe *d*. When the damper *5* is turned the dust caused by shaking the grate is drawn up into the chamber by the draft. The radiator, it is said, can be very readily cleaned with a scraper which is sent for the purpose. It operates through the clean out door and the smoke pipe collar in the rear.

The Boyden Power Brake Company, Baltimore, Md., have decided to take an appeal from the decision rendered last week by Judge Morris in favor of the Westinghouse Air Brake Company, in the suit brought by them against the Boyden Company for alleged infringement of a patented air brake mechanism.

The Secretary of the Interior has decided in favor of the Portage Lake & Lake Superior Ship Canal Company in

THE LETTER BOX.

Elbow Pattern.

From C. C., Livermore, Cal.—I would like some information regarding how to put a square elbow together. I can describe the pattern in the usual manner, but when it comes to allowing for edges I cannot get it right. I only turn over the upper part of the lower piece, and that throws the elbow out of bevel.

Answer.—We think it is the usual custom with tinnermen when making elbows, as for stove pipe, to turn the large part of the elbow so the entire edge can be turned in, especially at the heel. The small part of the elbow has the edge turned out, so as to receive the outer edge. For small elbows, as those made of tin, that are to be soldered, the throat part of the small end is usually turned out, and the heel part of the large end turned in. Just how the patterns should be described would depend perhaps on the method of working. If difficulty was experienced in putting the two parts together after the edges were properly turned, or the desired angle was not obtained, it might be well to describe the patterns so the large end would have a little more than the required bevel, and the small end a little less. When describing patterns of any kind it is usual to obtain the net patterns, and then make due allowances for edges outside of the boundary lines.

Allowance for Iron Pipe.

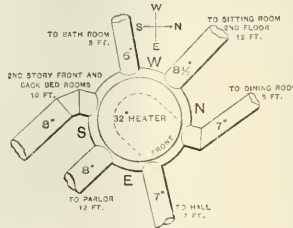
From C. C., Livermore, Cal.—Is there any set rule for each thickness of sheet metal in making round pipe? That is, how much to allow on the end the pipe goes in, or how much to take off on the end that goes in the pipe.

Answer.—There are general rules in use among tinnermen for making ordinary round pipe. Thus for No. 24 iron it is usual to allow $\frac{1}{4}$ inch, for No. 26 iron about $\frac{3}{16}$ inch, and for tin pipe say $\frac{1}{8}$ inch, depending on the thickness of the tin. Whether the allowance is to be given to the large end or taken from the small is a vexed question among tinnermen. When a crimping machine is used the two ends of the pipe are made the same size, the machine making the reduction. When making round pipe from heavy iron it is usual to allow three and a half times the thickness of the iron at each end, not counting for the lap. Thus supposing a certain pipe was to go inside of a flange, the iron would be marked three and a half times the thickness of the iron less than the circumference. If the inside of the small end of a pipe was to be made a certain diameter, three and a half times the thickness of the iron would be

added to the circumference. That the large end of this pipe should allow another joint to enter, the large end should have added to it another three and a half times the thickness of the iron. Thus the large end of the pipe would measure in the flat seven times the thickness of the iron more than the small end.

Trouble With Furnace.

From TINSMITH, Philadelphia.—In reply to "Dealer," who reports trouble with furnace in *The Metal Worker* March 2. Having had 24 years' experience, I would suggest in the first place that the size of the pipes be reduced, as the furnace has not the capacity to fill them. 2. The pipes are too close together; they should be divided more evenly around the top of the furnace so that one cannot rob



Trouble with Furnace.

another. 3. Do away with the cold air duct and ventilate the cellar front and back. I submit the plan of a furnace job I completed a few weeks ago, during the cold snap, in one of a row of houses situated the same as the one in which my fellow mechanic is having trouble. All of my pipes are smaller and I have no cold air duct; all I do is to ventilate the cellar. I have tested the job to see what temperature I could raise, and the results were more than satisfactory. The average temperature on the first floor was 70°. By throwing one-half of the heat to the sitting room into the hall a temperature of 94° was shown in the hall outside of the sitting room door 8 feet away from the register. The house was a two-story seven-room residence and I used a first-class 32-inch furnace. I would like to hear if some of my fellow mechanics can do better than that with large heat pipes and cold air ducts.

Cement for Marble and Basins.

From H. F. H., Boone, Iowa.—In *The Metal Worker* of March 9 "E. S. N." inquires for a cement to fasten bowls to marble slabs. If he will use white lead and sand mixed as stiff as putty, he will find that it will stand all tests. He must be sure to have it stiff and well mixed, or the oil will soak through the slab if it is thin.

From CHICAGO.—I notice in *The Metal Worker* of March 9 an inquiry from "E. S. N.," Westminster, Md., who wishes a recipe for a good cement for joining marble and basins to marble slabs. The basins should be ground to fit the marble and then plaster of paris used as a cement. When properly applied it will not break or fall off.

Japanning Tin.

From J. H. R., Munhall, Pa.—For some time I have been unsuccessfully attempting to japan tin. Can *The Metal Worker*, through its columns, explain the proper method to be employed, as manner of applying, temperature for baking, &c.?

Answer.—The japanning of tin is an operation that requires considerable skill and experience, and if our correspondent has much of this work to do, it might be well to employ a regular japanner. For japanning by the means of heat, it is necessary to have a closed closet or oven, which is to be provided with a small stove or other heating device by means of which an even degree of temperature can be maintained for any desired time. The oven should be provided with a suitable door, and can be made of brick or galvanized iron, the walls being double, similar to the portable bake ovens. Provision should also be made for a steady draft of air through the oven for the purpose of removing the vapor from the drying japan. The oven should be kept free from dust or smoke, and be provided with proper shelves and hooks, so arranged as to be adapted to holding the various articles that are to be baked. Ovens of this sort are manufactured by the G. S. Blodgett Company, Burlington, Vt.

The japan is applied to the article by means of a flat varnish brush, and when applying the japan the strokes should have such a direction as to insure their being horizontal when the article is placed in the oven, thus preventing the formation of streaks. After the articles are covered with japan they are to be placed in the oven, which can be at a temperature of about 125° F., and gradually raised to 300°. As soft solder becomes weakened at 320°, soldered articles should not be heated over 300°. The articles are to be kept in the oven for five or six hours or longer, when the temperature of the oven is gradually reduced. Baking japans of various qualities and colors can be obtained from varnish manufacturers, as can also drying japans, that do not require to be baked. If it is not convenient to use an oven for baking a lacquer for tin can be made by reducing No. 1 furniture varnish with turpentine and coloring with

any of the transparent colors. A cheap brown japan varnish for tin can be made by reducing asphaltum varnish with turpentine, or rather by putting a little asphaltum varnish into turpentine, for so little of the varnish is required that it is liable to be made too thick, and thus give the tin the appearance of being painted. A thin varnish brush should be used for applying the liquid, and by experimenting on pieces of tin the required shade can be obtained. When the article to be covered with either thick or thin asphaltum is warmed, the varnish will dry quickly, and be quite hard and glossy.

Air Bound Service.

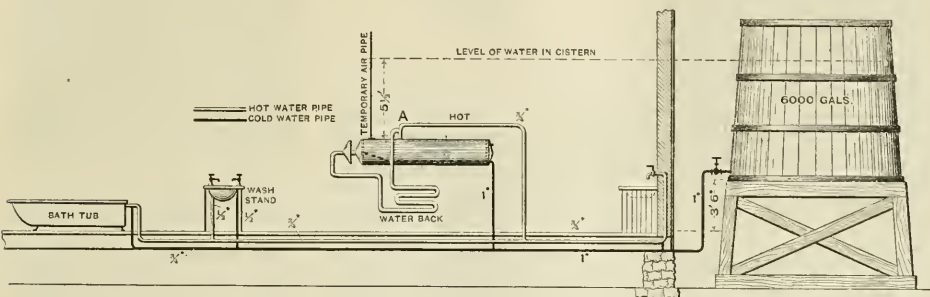
From E. M. P., Brookhaven, Miss.—I send a sketch of a range boiler and connections which I have recently put up and which does not work. I would be glad to receive some information as to the cause of the trouble; first, to stop the owner from visiting my shop three or four times a day and worrying me, and then, too, for my own satisfaction and enlightenment. The cistern is

I have turned the kitchen stove upside down, and the "man of the house" wants hot water to bathe. The trouble is this: There is plenty of hot water in the boiler, and the pipes under the house are full and hot, but it will not run out of the faucets. I forgot to say that my pipes all run down and under the floor and then up to the sinks and bathtub. There seems to be pressure everywhere except at the faucets. The cold water flows finely, but the hot seems to stop in the pipes just where they turn up through the floor to the faucets. Now I find that by opening up a union in the hot water pipe under the house there is plenty of pressure and boiling hot water. Thinking that the whole system needed air, I attached a piece of pipe temporarily to the unused opening on top of the boiler; but that did no good. I found, too, that when I gave the pipe air by unscrewing the union under the house the water ran some from the lowest faucet in the bathroom; but when the union was made tight again the flow of water stopped. The water is heated quickly and circulates well. There seems to be a lack of pressure somewhere. Please tell me where the trouble lies. I hope my description, explain-

heated it expands and the pressure is not sufficient to displace it. In drawing water from a hot water faucet the discharge often commences with an irregular stream interspersed with air puffs, when finally the water flows smoothly. This is because there is sufficient pressure to drive the air out ahead of or along with the first flow of water. On opening the union in the cellar a siphonic action was started which caused the flow of water. Water flows from the cold service because there are no air traps in it. The arrangement of the piping has no special defects, but for a 50-gallon boiler 1-inch pipes to and from the water back are better than $\frac{3}{4}$ -inch pipes. It is better for the bottom or lowest part of any boiler to be higher than the highest part of the water back, even though many boilers are set differently.

Pattern for Conveyer.

From J. S. K., St. Louis—I would like to learn through *The Metal Worker*



Air Bound Service.

a large one, 10 feet high and 11 feet in diameter at the base, and holds 6000 or 7000 gallons. It has 4 feet of water in it, and the top of the water is $5\frac{1}{2}$ feet above the boiler. The boiler is a patent self cleaning one holding 50 gallons. It has two openings in the side, two in the top and one in the bottom. I first set it upright on the floor and without the stand and connected it in the usual way, but it would not fill up. I concluded that there was not enough pressure from the cistern, as the water was only about a foot above the top of it, and then I connected it horizontally, as shown. I used the side opening near the center for the hot water return from the water back, and connected it direct with the pipe leading to the bathroom and kitchen sink. The boiler lies on a level with the water back. The hot water pipe between the stove and the boiler has three elbows in it, and the cold water pipe has only two turns in it. The openings in the boiler are all 1 inch, which I have reduced to $\frac{3}{4}$ inch. I use only one opening in the top end of boiler; the other I plugged. The cold water supply pipe is 1 inch until it enters the boiler, when it is reduced to $\frac{3}{4}$ inch. I have one main pipe under the house taking the cold water to bathroom and sinks from which I take the cold water supply for the boiler. Now, then, the trouble comes. The work is all done, and the cook is mad because

tion and drawing will enable you to see the cause of the trouble. Is it a lack of force from the cistern, or is it a want of air in the pipes? Is my construction of hot water pipe from coil to boiler right? Please let me hear from you through *The Metal Worker*.

Answer.—The trouble is due to air collecting in the hot water pipe from the boiler where it turns down to supply the fixtures. If an automatic air valve is placed on this pipe at A or a pipe open at the top like that placed on the boiler, but run up high enough so that it will never overflow, the air can escape and the water will flow. If a pipe is used for an air vent, the end may be turned down after it has run up above the highest probable water level and the end carried to a sink so that an overflow could do no harm. A dip such as is shown is common in piping house service and only gives trouble when the water pressure is extremely low, as in this case, where, the head being about 5 feet, the pressure is but slightly over 2 pounds. All water contains more or less air, and in boiling the air is liberated to collect at some point unless it can escape. In this case it has collected in the service pipe and when

how to cut the pattern for the flange of a conveyer. I have a job at hand that requires a flange around an 8-inch pipe, the flange to be wide enough to fit tight into a 16-inch cylinder and must make a circuit every 30 inches, as shown in the sketch.

Note. This is a problem that has frequently been presented to us, but has never been answered in the way requested. As a matter of fact a pattern cannot be cut for the helix described by our correspondent. To make the form the metal has to be stretched. The usual way, we believe, is to cut the metal into split disks and then hammer them until they will take the proper pitch. Then by fastening a succession of disks together the conveyer is formed.

Stained Galvanized Iron.

From SUBSCRIBER, New York—Can some reader of *The Metal Worker* give the formula for restoring galvanized sheet iron from store or mildew defects?

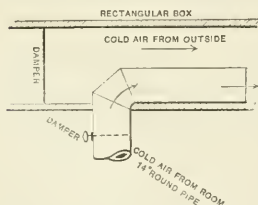
Note.—Galvanized iron is often discolored from dampness, and the appearance very closely resembles mildew, although, of course, it cannot properly be called mildew, which is a vegetable

growth. We think it is the custom in most shops to scour the discolored iron with a wire brush or something that would produce the same effect, and then use the iron in places where the discoloration is not objectionable owing to appearance. To restore the original appearance of the iron is impossible unless the sheets are galvanized.

A Peculiar Furnace Experience.

From CHARLES N. ARNOLD, *Norwalk, Conn.*—If "C. S.," Cleveland, Ohio, who reports a peculiar furnace experience in *The Metal Worker* of March 9, will connect the exhaust pipe from the sitting room with the furnace pit, just under the edge of the bottom plate of the furnace, instead of running it into the furnace casing or chamber, it probably will work all right, provided that the slide in the cold air box is closed sufficiently far that the heater is compelled to receive a portion of its supply of cold air from that particular source rather than from the cold air box proper. Exhaust pipes of this description are often very erratic in operation, and not infrequently disappointing in results. In my judgment, the difficulty is largely a question of too great a supply of cold air for the number and size of hot air pipes in commission, which transforms this exhaust pipe into a service or hot air pipe. Neither of the methods proposed provides the best method of disposing of the cold air in the room. If "C. S.," will send me his address I will endeavor to inform him how to construct a cold air relief or exhaust pipe that will properly ventilate the room.

From J. W. G., *Clinton, Ill.*—Referring to the communication from "C. S.," Cleveland, Ohio, in *The Metal Worker* March 9, I would suggest the following methods of meeting the difficulty. I have never met exactly this trouble in practice, but have had something similar. The cold air duct is of course made large enough to meet all the possible demands likely to be made upon it at any time. When only three



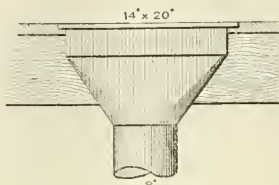
A Peculiar Furnace Experience.

or five pipes are used, as mentioned, the duct is of course larger than these pipes require. The cold air pipe should have a damper for use at such times, but we are not advised of any, nor do the sketches show one. It is likely that this was the condition when the inside cold air duct was added on the side of the furnace opposite the outside cold air duct. This latter having larger capacity than the hot air pipes in use would produce a slight pressure on windy days, which would be relieved by heated air coming from the register in question. I think a damper as men-

tioned above and properly set would prevent this trouble. I would also take the editor's suggestion and remove the length of pipe inside the furnace.

If the firm having this in charge do not care for expense I would recommend that they run pipe from the register in question direct to the nearest point of the outside duct and place an elbow and length of pipe just inside, the length of pipe pointing toward the furnace. Dampers should be placed in conspicuous places in both ducts. I think no difficulty would ever be found with this arrangement.

From S. J. P., *Pittsburgh.*—In answer to "C. S.," Cleveland, Ohio, on a peculiar furnace experience, in *The Metal Worker*, March 9, I would suggest that he reduce the exhaust pipe



A Peculiar Furnace Experience.

from 14-inch to about 8-inch, making his register box funnel shape or tapering from 14 x 20, which is the size of exhaust register, down to 8-inch or not over 9-inch, and then carry a pipe to the extreme bottom of heater, having an elbow turn up. Then put a damper in main cold air duct, if it hasn't one already; close the damper in main cold air duct until he finds the upward current drawing down the extra exhaust pipe and he will find it will work all right. The first mistake is the exhaust pipe is too large and the main cold air duct brings all the cold air the heater can take care of, consequently it won't draw on the extra one.

From EXPERIENCE, *New York.*—I had just such a peculiar furnace experience as that mentioned in *The Metal Worker* of March 9 some years ago. The room was exposed to the north and east. I ran the hot air pipe up to within 8 inches of the ceiling, and carried the cold air pipe from the floor to the furnace. Then everything worked like a charm. "C. S." can test this method easily by taking out the register and running a pipe that will fit tightly into the collar of the register box up near the ceiling. Then by having a good fire and the doors leading from the room closed, a few minutes will show him how he must vary the piping to suit the rooms to get the results he desires. There may be other circumstances connected with his case that hinder circulation, but ordinarily the method I have described will overcome the trouble. Furnace problems are very simple, consequently very elusive. If the cold air and hot air pipes are properly proportioned with the size of the furnace, air will flow in almost any direction. Msdam Nature wants her laws obeyed and she can be coaxed to do most any thing, but always makes trouble when forced. She has always been very kind to me, and will be to any one who tries to please her.

Trouble With a Water Tank

From C. A. W., *Weissburg, Pa.*—About 18 months ago I was called upon to line a water tank which was used instead of a cistern. The tank was 7 feet long, 4 feet wide and 6 feet deep, and I used in it No. 26 galvanized iron. The tank itself is made of 2-inch planks thoroughly braced so it cannot expand. I considered it well made of wood, and put in the iron and soldered the seams as thoroughly as I could. The owner, however, soon reported that the tank was leaking, and when I came to find out the trouble I discovered that about one half of the side seams were cracked. I repaired it, but again it leaks. I find the bottom is all right. I would like to hear from readers of *The Metal Worker* if they have had similar experiences and how they overcame the trouble.

Finish for Slate Roofing on Ridge and Hip.

From SLATER, 772 *Columbia street, Hudson, N. Y.*—Replying to the inquiry of "M. A.," Suffolk, Va., that appeared in *The Metal Worker* of March 16, and noticing the explanation you have given him, would say that I think he will be obliged to look for an experienced, practical slater to teach him the trick of the trade; and if I can be of any service to him, I should like to have him write me. I would like to hear from "J. R. S.," West Fairview, Pa., who wants to know the best method of hanging gutters for slate roofs on high buildings without the use of ladders. The inquiry appeared in *The Metal Worker* of November 24, 1894.

Which Is Best for Furnace Tops?

From FOREMAN, *Newark, N. J.*—In answer to "J. C.," in *The Metal Worker* March 2, in reference to the style of furnace top, my experience has been in favor of the cone top. Either style of top will not hinder the furnace from doing good work if there is an ample air chamber under it. If the radiator in the furnace reaches up into the top, leaving no space for a volume of air to collect, the hot air pipes are not likely to be well filled. I have known unsatisfactory furnaces made to do good work with no other change than an increase in the height of the air chamber. If the radiator fills the furnace body or casing full, the air that passes up between may not be enough to fill the pipes, while if there was an air chamber for the following air to cushion against, it would flow in faster and would expand to fill the air chamber, and then the pipes would be full. For instance, a 36 inch casing inclosing a radiator 30 inches in diameter would leave 3 inches of air space all around. The 36-inch casing would have an area of 1017 inches. The radiator would have an area of 706 inches, leaving an area in the 3 inch air space of 311 square inches. Now if the furnace was put up in a house with three 9 and four 8 inch pipes, with a cold air duct 12 x 24 inches, there would be trouble without an air chamber. The area of the pipes would be 389 inches, or 78 inches more than the air space, so that some of the pipes would surely feel the effect. The area of the cold air duct would be 288 inches, or almost equal to the air space before the air is expanded by being heated. It is generally conceded that the air would, in ordinary cold weather, expand one-third, when, if there was no

air chamber at the top to receive this increased bulk due to expansion, the air would be held in check and overheated. Then, when delivered to the pipes at a high temperature, it would cool and contract in the pipes, and there being no air chamber to supply the deficiency, some annoying behavior would follow. By all means have an air chamber at the top of the furnace whichever style of top is used, and the average furnaceman will find it advisable to use the cone top in low cellars, to get the air chamber and pitch for his pipes. He will be forced to use the flat top when a number of pipes run in one direction, and he will find that, used with judgment, both styles of tops will do good work if an ample air chamber is provided. With steel furnaces having solid domes not less than 19 inches should be used on a 36-inch furnace, and increased as the diameter of the furnace and the area of the pipe increase. Furnaces having a cast iron radiator of hollow circular style, supported by pipes which bring the gases to it, may work with less air chamber.

Water Hammer in Pipes.

From G. D. H., *New York*.—Answer to inquiries of "G. A. L.," Manchester, Vt., and "G. J. M.," Oshkosh, Wis., that appeared in the *Metal Worker* March 16. The sudden closing of fire hydrant will give a shock to every house water supply for many blocks around unless their water supply pipe systems are amply provided with air chambers. The intensity of the shock, or more properly the water hammer, depends upon the length and size of the main line of the water flow between the hydrant and the reservoir, the velocity of the water in the main being the measure of the intensity of the shock at the sudden closing of a hydrant, hence much greater trouble from this cause occurs in town water systems with small sized mains. Thus under the varying conditions of the spouting, volume, and the time of closing the valve of the hydrant, there are possibilities of any percussion pressure up to 400 or more pounds per square inch being brought to bear upon the main near the closing hydrant and the house pipes and hot water boilers in the neighborhood. The only safety in a water supply system is in using care and common sense in the handling of hydrants, and, in dwellings, to provide air chambers by extending the pipes a foot or more above each bibbin the house or as many as can be made convenient. As in "G. J. M.'s" trouble, if the plumbing construction does not allow of continuing the pipe for each sink or wash basin there should be an extension of both hot and cold water pipe at the bathtub and also at the kitchen sink. If the water is used above the kitchen, second or third floor, a branch pipe may be taken out of the water pipe near the floor and carried up into the sink for an air pipe on each story. Where the water is continually under pressure at the bibbe, the air finally becomes absorbed by the water, which will be known by the hammering in the pipes when bibbs are quickly closed. In order to recharge the air chambers, the water should be shut off in the cellar and the water in the pipes drawn off at the lowest bibb with the other bibbs open, when air will be drawn into the pipes and the air chambers will become charged with air. An air chamber in the cellar will only half remedy the water ram, as it will stop the impact on the street service pipe,

but will not prevent it at the bibb that is closed suddenly. There is no necessity for making the air chamber other than with the pipe used for the house plumbing. Wherever a bibb is fastened on to a lead pipe the pipe can be continued up the wall or backboard for a foot or more as convenient. Ball cocks sometime stick. They should be left easy on the plug and the float be loaded to half immersion when free in the water; they will then pull down easy, or what is perhaps better use the compression valve and ball which is now almost universally used in our cities for flush tanks.

Method of Heating Water.

From E. M., *Omaha, Neb.*—In order that the great West shall be represented in the Letter Box, I will attempt to give "J. P.," Massachusetts, assistance with his water heating problem in *The Metal Worker* of February 16. Having set his boiler, the bottom of which should be above the heating coil for good circulation, it should be connected with the coil in the fire chamber of the steam heater, with a rise in the pipe from the top of the coil to the side connection in the boiler, and a fall in the pipe from the bottom of the boiler to the bottom of the coil. The coil has sufficient heating surface for a good size boiler, unless a great deal of hot water is drawn. The coil will expose about 14 square feet of heating surface, and having no data as to the capacity of such surface for heating water in a kitchen boiler, I make a deduction from house heating rules. One square foot of surface in a coil, under such circumstances, would carry 40 square feet of radiation, and assuming that there is a pint of water to the square foot, 1 foot in the coil should heat 5 gallons of water, and as the coil has 14 feet of surface, it would probably heat 70 gallons. The house heating rules are based on heating the same water over and over, while in the case of "J. P." cold water would enter the boiler to be heated every time hot water was drawn. However, as the surface exposed by the boiler is so very much less for the water contained in a house heating system, it is probable that the coil would keep even a large boiler filled with hot water. I would risk a 100-gallon boiler in connection with it. In piping from the coil to the boiler, at the proper or most convenient place for connecting with the summer heater a Y should be placed on both the flow and return pipe for receiving the pipes from it. On the flow pipe from both the coil and the heater a gate valve should be placed to shut off whichever is not in use. As the boiler is connected with a supply pipe, no expansion tank will be needed. Owing to the warmer temperature of the supply water and the atmosphere, the work of the summer heater will not be so heavy as that of the coil, and a small heater will do the work. Even though the coil is made of 1½ inch pipe, as stated, the connecting pipes may be 1½ inch with some advantage, and the boiler connections should be full size.

Furnace Pipe Rule.

From E. T., *New York*.—If I had the problem which "H. E. G." presents in *The Metal Worker* February 2, I would calculate on a velocity of 400 feet per minute and filling the room in 15 minutes. I would then get the velocity to do the same work in one minute by multiplying the 400 by 15, which would give 6000. I would then divide the known quantity of air by 6000, which

would give the area in feet of the opening necessary to let this amount of air through. I would then reduce the area in feet to inches and divide the result by 0.7854 and extract the square root of quotient. This would give the diameter of a pipe that would let the known quantity of air enter in 15 minutes at a velocity of 400 feet per minute. I would use a register with dimensions that would give an area 50 per cent. greater than the area of the pipe, as register faces are made much more solid or close than formerly.

Is It a Good Investment?

From T. W. R., *San Francisco*.—We reply to "J. B.," New Jersey, in *The Metal Worker* of February 23. It may be a little late, but you will remember that we do not receive *The Metal Worker* until Saturday, it then being about a week old, but we thought our experience in regard to his inquiry might be of some use to him and also to others. We cannot agree with him in the economy of a circulating pipe being a good investment in connection with an ordinary cook stove for a heater. The great objection to a circulating pipe in an ordinary residence is that the constant traveling of the water through the pipe cools off the water, as the proportionate body of water carried in a ½-inch pipe to the boiler is many times greater, consequently making it difficult to raise the temperature to the ordinary requirements for domestic use. I have seen new residences where the silver tongued plumber talked the owners into putting in a circulating pipe, there not being over 200 feet of hot water pipe, where the kitchen range could not raise the water above 110°, and by shutting off the circulating pipe it could raise the water to 160°. This is actual experience. Circulating pipes do not give satisfaction where the ordinary kitchen range is used as a heater. In large buildings, where large quantities of water are used and where a special heater or steam is used, then it is a paying investment. This experience is in California, and if it is not a success in our mild climate, it surely could not be where you have below zero weather.

Are Gravel Roofs Durable?

From W. F. COZZENS, *St. Louis*.—My attention has been called to an article in *The Metal Worker* of March 2, from G. F. Wheelock, Birmingham, Ala. His position in respect to the cost of a tin roof is well taken. I think, however, I can break the club to which he alludes as being in the hands of the gravel roofer. If he ever visits St. Louis—and Southerners do sometimes come here—I shall take pleasure in showing him tin roofs 36 years old, and one that I worked on 54 years ago, and which has not had more than one coat of paint in 20 years.

Keeping Shop Tools.

From ZENOPHEN.—I wish some of the contributors to the Letter Box would describe the best method of keeping shop tools. I will start the question ball rolling by asking for a good way to keep shop soldering coppers.

Pattern Wanted.

From C. R., *Baltimore, Md.*—Please ask some of the readers of *The Metal Worker* to submit a pattern for an 8-inch flaring collar to use in a square pipe. I think one of your former writers signing himself "Practical" described such a pattern.

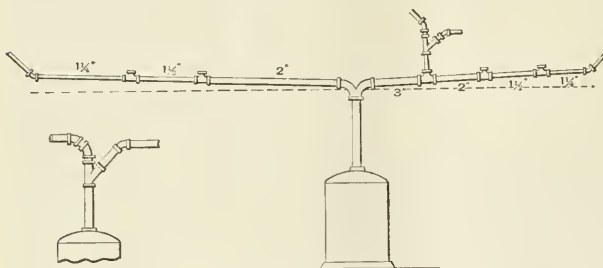
STEAM AND HOT WATER.

A Pipe Fitting Question.

From SAMUEL HEINS, *Rondout, N. Y.*—Having answered many questions of *The Metal Worker* on different subjects, and wishing to help my fellow workmen in ferreting out the defects on different kind of work, I read over *The Metal Worker* of February 9 and saw a pipe fitting question from "C. E." of Worcester, N. Y. With the experience I have had I think he makes a big mistake at the starting point on the boiler. I never approved of using a T when there are fittings made that would render better service. By using a twin ell or a Y with a nipple and a 45° ell he would get better results, as I will show further on. There is less friction with them and there would be a better

is the minimum flow that would be used for 500 to 800 square feet of direct radiation, which is large enough to supply a very good size job. I show in the sketch the way I would start. I never use any elbows if I can avoid them. The connection is made with a twin elbow. Another way of making the connection is with a Y and two nipples and two 45° ells.

By this method an easy flow will be started. A part of the labor on any job is making a plan of the proposed work, which should always be done. As I understand the branch on the main, it is intended that a T shall be placed on the riser in the same way as at the boiler. If I was doing the job I would put in a Y and with 45° ells make the turns as shown. This would



A Pipe Fitting Question.

circulation. There should never be any "bull nose" fittings used on hot water work. Each one of such fittings, especially elbows, is an obstruction. I would also recommend never to take any connections from the side of a fitting. They should be taken from the top with a short nipple and a 45° ell. As far as I understand it he would not get a good circulation. I would say that *The Metal Worker* is right as it explains the case. Let me say to "C. E." that the best way would be for him to experiment and find out himself which would be the best way. That is the way I would do. The way the best mechanics find out all the defects is by experiment. As the old saying is, "If at first you don't succeed, try, try again." I have had many difficulties in my past experience, and I started with steam and hot water heating when there were only about half a dozen men in the United States who did such work. I worked for Jas. P. Wood when he was the only man in Philadelphia who did steam heating, and we had to work hard, and it took a great deal of thinking to make a job work perfectly. Now every Tom, Dick and Harry that never served a day at the business comes out as a steam and hot water fitter. I remember one man in Riverton, N. J., who never saw a hot water valve or a hot water job done, and he did not know the minimum supply of different size pipes, but came out as a hot water and steam engineer. "C. E." starts off with a 3-inch pipe from boiler, which

make a first-class job and a free circulation, but my advice to "C. E." would be to study up on steam and hot water heating.

Loss of Heat and Radiation.

From FRANK J. GRODENT, *Denver, Col.*—I have taken some interest in the questions of "H. T. G." on the loss of heat and radiation, as published in the issue of *The Metal Worker* for February 9, 1895, page 45. I have looked up the back issues of *The Metal Worker* for 1892 containing the articles of Leicester Allen on this subject, and to which you refer. In the issue of October 1, 1892, page 38, in which illustrations of different constructions of walls are given, and practical example taken of Fig. 21 to show the application of the different rules given, there are a few points of doubt to me about which I desire to question. I have been over the several articles published by Mr. Allen, and they contain some most valuable ideas, and lead direct to the subject, and it is their many good points which make me the more desirous to clear the cloud of doubt. In going through the articles I found a number of errors regarding reference letters and decimals, but these I have corrected. The practical example is the one upon which I desire information, and relates to Fig. 21. First, regarding the second coefficient of transmission being 0.4411. Is this amount correct? Conduction for lath and

plastering 1 inch thick being 3.86 units of heat per square foot per hour, for $\frac{1}{2}$ inch (being less than 1 inch) would naturally lose more heat units than if 1 inch thick. Seven eighths inch equals 0.875 inch; 3.86 divided by 0.875 equals 4.411 as the units of heat lost through 1 square foot of lath and plaster in one hour. It therefore seems to me that 4.411 should represent the second coefficient of transmission, instead of 0.4411 as published. The third coefficient of transmission as published is 1.2100, and I cannot see why 1.2100 should be called the second coefficient of transmission, and used in the first part of "operation second"—viz., "1.1558 divided by 1.2100 equals 0.9591." First coefficient as published is 1.1558, and the second coefficient as published is 0.4411. If this 0.4411 is correct instead of 4.411, as I have questioned, why do we not divide 1.1558 by 0.4411, instead of by 1.2100, which is published as the third coefficient of transmission, and to which reference as the third coefficient of transmission is made in the fourth column, page 38, issue of October 1, 1892? These articles of Mr. Allen's are very useful, but with a hitch like this in his plain way of explanation leaves a doubt in the final result not satisfactory. Possibly there are others who are in doubt on the same matter. If it can be made more clear I for one will be glad to receive an explanation that I may further investigate this most interesting subject.

Answer.—The above letter was submitted to Mr. Allen, and he furnishes the following reply:

I offer your correspondent my hearty thanks for his criticism of the figures given in the example of the application of Rule I in my article on the above subject in *The Metal Worker*, October 1, 1892. The whole of that arithmetical computation was performed by a trusted assistant, as explained near the top of the fourth column on the same page. I was too busy at the time the article was printed to give it the attention it demanded. I did not see the proofs before printing, and having looked at the series only in the most cursory way since it was published, I had not discovered the errors pointed out. The rules and formulae, which had been for some years prepared before they were published, are not vitiated by these figures. A writer in the *Popular Science Monthly* has recently said: "We often find that the errors in a conscientiously thought out thesis lead to a more thorough understanding of the subject than would have been attained had all the propositions been demonstrably true." I hope this case will prove no exception to that wise saying, although here it is only a mistake in the application, not the theorem that is questioned. If the

reasoning given at the conclusion of the article, and on which the rules are based, be not challenged (and so far no one has done this to my knowledge), the rules must stand good, and the application can be easily made to any particular case. The errors he points out in the working out of the example are admitted. It simply remains to correct them in order to reach an exact result.

The second coefficient in the computation is vitiated by the displacement of the decimal point and should be 4.411. With this correction we have, first, coefficient = 11.1558; second, 4.411; third, 1.2100; fourth, 1.1558; fifth, 1.1558; sixth, 2.50; and, seventh, 1.1558. In the second operation occurs the erroneous use of the third coefficient instead of the second in obtaining the first quotient. This quotient ought, therefore, to be $\frac{1.1558}{4.411} = 0.2600$, instead of 0.3931, as stated, and the second quotient should be $\frac{1.1558}{1.2100} = 0.9552$, instead of 1.0000. I also notice that in the fraction from which the fifth quotient in the second operation is derived the decimal point is dropped out of the denominator, although the quotient itself, as given after the sign of equality, is printed correctly. The sum of the corrected quotients and the first coefficient (according to the rule) will be 5.8360, which is the correct divisor or denominator of the fraction in the last operation whereby the temperature difference between the surface of the plaster and that of the interior air and objects is expressed. The numerator of that fraction is printed 700, instead of 70°, as it should have been, but the following quotient plainly shows that it was intended to be 70°.

Now writing this fraction again, with both numerator and denominator corrected, we have $\frac{70^\circ}{5.8360} = 11.994^\circ$, the interior temperature difference sought, instead of 11.643° as published. The difference is 0.351°. Fortunately, in this case one error corrected another so largely that the final result differs by only a trifle more than $\frac{1}{2}^\circ$ from the true difference. If the difference originally stated has been taken on trust by any one without going over the figures, it cannot, therefore, have misled any one materially. It is because it so closely approached the figure for this difference as recorded in my note book for a wall of the kind for which the calculation was made that I accepted the calculation as correct, and incorporated it into the manuscript of the article published on the date named.

In conclusion, I beg to again thank your correspondent not only for his discovery and criticism of these errors, but also for the courteous style of his criticism and the compliment he is pleased to bestow upon my humble effort to reach exact methods in a field where guesswork is much too common.

Heating Power of Petroleum and Gas Stoves.

Some very interesting information is contained in the following paper by Thos. Fletcher, the well-known gas engineer, which we reprint from an English exchange:

The data from which the following comparisons are made are too long and technical for the general reader, but those who wish to study the subject thoroughly and verify the results, will find the matter dealt with by Deville (*Comptes Rendus*) and Box ("Treatise on Heat"). The heating power of ordinary coal gas has been repeatedly verified, and the standard universally accepted is what is known as the British thermal unit—i.e., the amount of heat necessary to raise the temperature of 1 pound of water 1° F. One cubic foot of ordinary London gas has heating power equal to 660 of these units—i.e., if all the heat evolved in burning is perfectly utilized, 1 cubic foot of gas will heat 660 pounds of water, equal to 66 (Imperial) gallons, 1° F., or 6½ gallons 10° F. The heating power of an average sample of ordinary petroleum is 161,920 units per gallon, and if all the heat is perfectly utilized without waste, 1 gallon of petroleum will have the same heating power as 245 cubic feet of gas. If we take the price of gas at 2 shillings and 6 pence (82 cents) per 1000 cubic feet, the value of petroleum as a fuel should be 7½ pence (15 cents) per gallon, as compared with gas under the same conditions.

When these fuels are used in flueless stoves of any kind and the combustion is perfect the whole of the theoretical heating power given above can be and is obtained in ordinary use in heating the air. Either 245 cubic feet of gas or 1 gallon of petroleum will in a flueless stove raise the temperature of 603,000 cubic feet of air 20° F. The figures appear large, but the amount of heat required to raise the temperature of air is so exceedingly small that the figures become almost beyond the power of imagination. It will make matters more clear to deal with smaller quantities. One ounce of petroleum and 2 cubic feet of gas have precisely the same heating power, and either if perfectly burnt in a flueless stove will heat a quantity of air equal to that contained in a room 23 feet square and 10 feet high 20° F. Of course, nothing approaching this is obtained in practice for two very sufficient reasons: The walls, windows and ceiling absorb the heat rapidly, and the air in an ordinary room is on an average changed every 20 minutes by natural ventilation. Even when the walls, &c., are heated to the same temperature as the air it has been found by repeated trials that in a room this size the loss by conduction of the heat through walls, &c., is equal to that given off by the combustion of 15 cubic feet of gas per hour, and this added to the loss by ventilation makes a total of 21 cubic feet of gas, or 10½ ounces of petroleum per hour, to retain a rise of 20° F. where the room is continuously heated day and night. Of course, when the heat is only intermittent more will be required until the temperature of the walls corresponds with that of the air, and the raising of the temperature of these is a very slow process.

When we come to the heating of water or solid objects conditions are greatly changed, owing to the great loss of heat which is necessary in ordinary practice. Even with gas, in a perfect atmospheric burner with flame contact under the best conditions, water

cannot be boiled in a copper pan without a loss of at least one third of the heat; and with a petroleum lamp nearly two-thirds are lost owing to the impossibility of flame contact, which would cause smoking. The practical result is that for boiling water, the comparative value of petroleum, as compared with gas at 2 shillings and 6 pence (82 cents) per 1000 cubic feet, will not exceed about 4 pence (8 cents) per gallon.

Circuit Systems of Hot Water.

From PIPER, Illinois.—Is it practicable to pipe hot water heaters on the one-pipe system—that is, to use but one main from the boiler and to connect both flow and returns from the radiators with it, instead of running a separate flow and return main? In the one-pipe system, will the radiators that are furthest from the boiler get as warm as those that are nearer and get the water first? Will not the water be colder after passing the first radiator on the run, and so continue to grow colder after passing each successive radiator? Will the one-pipe system give as good results as the two-pipe system?

Note.—Some heating men have found no difficulty in making a hot water circuit system satisfactory. In making connection with the radiators, the flow connection is taken from the top of the circuit main, and the return from the radiator is connected with the side of the main. By this means the colder water from the radiator does not lower the temperature of the water in the top of the main to any considerable extent. In proportioning circuit mains some use the area of 1½-inch pipe for each 100 feet of radiation, which is a more generous proportion than is usually applied. By this means the main has a considerably larger area than the connections to the radiators, permitting the water which is returned cool from the radiators to flow along the bottom of the main without influencing the hotter water in the upper part. Nevertheless, it has been found that the first radiators on a circuit system become somewhat hotter than those at the latter end. In consequence, some place a greater amount of radiation in the rooms that are fed on the last end of the circuit. Where a circuit system that is properly proportioned has been installed, satisfactory results are obtained. It is claimed by those who have had the most experience with it that it is not adapted for all classes of buildings. Some information on this subject will be found on page 40 of *The Metal Worker* of March 2. We will be glad to have our readers discuss this subject more fully.

G. B. LEONARD has discontinued his business at La Salle and moved to Chicago, where as one of the partners in the firm of Leonard & Weinberg, 4316 Cottage Grove avenue, he has engaged in the heating and plumbing business. He reports the prospects for good trade as excellent, and mentions that they have on hand at present from \$3000 to \$4000 worth of heating contracts and expect soon to have their shipping and show rooms in good order.

Formula for Hot Water Piping.

BY J. L. BIXBY, JR.

The following original and purely empirical formula for calculating the size of pipes for hot water heating may be of interest to the readers of *The Metal Worker*:

Sq. ft. = square feet of surface.

D = diameter of pipe in inches.

$\sqrt[5]{F}$ = fifth root of the floor, as first, second, &c.

INDIRECT RADIATORS.

$$\text{Sq. ft.} = \frac{100 \times D^2}{3} \quad D = \sqrt{\frac{3 \times \text{sq. ft.}}{100}}$$

FIRST-FLOOR RADIATORS.

$$\text{Sq. ft.} = \frac{100 \times D^2}{2} \quad D = \sqrt{\frac{2 \times \text{sq. ft.}}{100}}$$

RADIATORS FROM RISERS.

$$\text{Sq. ft.} = \frac{100 \times \sqrt[5]{F} \times D^2}{2} \quad D = \sqrt{\frac{2 \times \text{sq. ft.}}{100 \times \sqrt[5]{F}}}$$

The appended table gives the square of the nominal diameter of the pipes in inches and the fifth root of the floors. The allowable variation from the an-

work, the incorporators being William H. Page, William A. Pope, Dennis J. O'Grady, R. T. Huggard and Thomas O'Hare.

Smith's Little Giant Water Heater.

An illustration is herewith given of an attachment intended for use with any warm air furnace. It is placed in the upper section of the fire chamber opposite the feed door, holes being drilled in the furnace casting for the passage of the flow and return pipes. Being placed in this position, above the fire, its curved shape and broad surface cause it to receive the full benefit of the coal consumed without detracting from the general heating power of the furnace. The flow and return pipes are threaded for connection with pipes running through the house. They are also fitted with washers so shaped as to set snugly against the furnace casing and prevent the escape of gas and smoke. Set screws hold the washers tightly in place.

This water heater is designed for two kinds of service. In the first place, it can be used for combination heating, to warm one or two rooms more than

letters spell "The Winchester Boiler The Best," relate to this well-known apparatus and tells in rhythmic fashion what a great boiler it is.

PRESIDENT JOSEPH BOND of the American Radiator Company had the honor of taking luncheon with the Lord Mayor of London, at the Mansion House in that city on February 28, and also had the pleasure of meeting the Lady Mayoress and family, several members of Parliament, generals and other dignitaries.

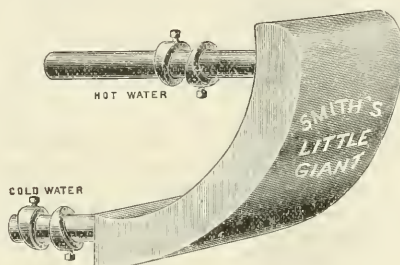
J. EDGAR TITZELL, Millersburg, Pa., has added steam and hot water heating to his business and will be glad to receive catalogues and other printed matter from the trade.

W. B. GRAVES, foreman of the steam and hot water department of the E. W. Oliver Company, Niagara Falls, N. Y., has tendered his resignation. Mr. Graves has purchased a one-half interest in the establishment of his brother, C. H. Graves of 62 North Clark street, Chicago, who is in the steam heating business.

IN AN ADDRESS before the Stationary Engineers' Association No. 2 of Cincinnati on Wednesday evening, March 13, delivered by Capt. W. H. Meredith, an old marine engineer, the speaker said that in a long experience he had found that the practice of heating and ventilating required more actual ability to carry it through successfully than any branch of engineering he knew of. The speaker went on to show the parallelism between the steam heating plant and the human body. "Let the boiler," he said, "represent the stomach receiving the fuel. Here combustion takes place and starts the vapor on its course through all the ramifications, finally entering the radiator, and there giving up its heat and being condensed into water, it again returns to the boiler through the return pipe, there to receive more heat and start on its circuit again. The steam pipes represent the arterial system and the return pipes the venous system of the human body, and the blood flows through the lungs, taking up fresh oxygen and passes on, giving strength, tone and tissue to the body. So also the vaporized water of the heating apparatus gives warmth, comfort and life to those who use it."

THE AMERICAN RADIATOR COMPANY will establish their London office at 143 Queen Victoria street and expect to occupy it by April 1. A commodious storeroom in connection will give ample space for the display of samples of all kinds of heating apparatus and specialties of American manufacture. The location is a most convenient and desirable one, and the company desire that those of the trade who visit across the water should be sure to make that office their headquarters.

The State Department at Washington is about completing a work which will be of great utility to manufacturers and others who are connected with the Central and South American trade. It is a compilation which has been in course of preparation for some time, under a provision adopted by the International American Conference some time since. The work in question is an "International Catalogue of Exports and Imports," containing a uniform nomenclature of articles of merchandise such as are common in the trade between the United States and the Latin-American countries. The terms will be published in English, Spanish and Portuguese,



Smith's Little Giant Water Heater.

swers given by the formula is the mean between the next larger and smaller size pipe. The allowable distance of the radiators from the boiler equals about one-half of the square feet of surface in the radiators. The heating surface in the main pipes must be included in the radiation.

Nominal diam.	D ²	Floor.	$\sqrt[5]{F}$
$\frac{1}{8}$	0.25	1	1
$\frac{3}{4}$	0.5625	2	1.15
1	1	3	1.24
$1\frac{1}{4}$	1.563	4	1.32
$1\frac{1}{2}$	2.250	5	1.38
2	4	6	1.43
$2\frac{3}{8}$	6.250	7	1.47
3	9	8	1.52
$3\frac{1}{2}$	12.25	9	1.55
4	16	10	1.58
$4\frac{1}{2}$	20.25	11	1.61
5	25	12	1.64
6	36	13	1.67
7	49	14	1.69
8	64	15	1.71
9	81	16	1.74
10	100	17	1.76
11	121	18	1.78
12	144	19	1.80
13	169	20	1.82
14	196	21	1.84
15	225	22	1.86

A NEW CORPORATION at Columbus, Ohio, are the Columbus Steam Boiler & Heater Company. The company have a capital stock of \$5000 and are formed for the purpose of repairing and manufacturing steam boilers and heaters, tanks, stacks, water towers and the manufacturing of sheet and rolled iron

can be heated by the furnace, or which are too remote to be easily reached by warm air flues. In the second place, it is adapted to houses in which cooking is done exclusively with gas or gasoline, as while the furnace is in operation the house is supplied with an abundance of hot water without additional cost. Four sizes are made, which are rated to carry respectively 30, 50, 75 and 100 feet of radiation. The Little Giant is manufactured and sold by Charles Smith, 175 and 177 Lake street, Chicago.

HEATING NOTES.

STEWART A. JELLET, Philadelphia, president of the American Society of Heating and Ventilating Engineers, had a visit from Vice-President W. M. Mackay of New York this week.

THE KALAMAZOO RADIATOR COMPANY of Kalamazoo, Mich., have opened a salesroom for their radiators at 96 Lake street, Chicago, which will be in charge of Clarence M. Converse.

WE ARE REQUESTED by the Gurney Hester Mfg. Company, Boston, Mass., to state that they have no agency in New York City and that their goods are for sale to any of the trade who might apply for prices.

THE SMITH & WINCHESTER COMPANY, Boston, Mass., send out on the back of an advertising card an acrostic furnished by J. M. Knox of Chicopee, Mass. The verses, in which the initial

and the publication will probably be sold to business houses at the cost of printing.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until April 4, for work, including the plumbing, for the United States Court House and Post Office, New Albany, Ind. Drawings and specifications may be obtained from the custodian at New Albany.

THE BOARD OF EDUCATION of Erie, Pa., are to readvertise for bids for heating and ventilating schools 4 and 14.

W. F. RUTTER & Co., Lawrence, Mass., bid \$1841 and secured the plumbing contract which requires McShane water closets for the John Tarbox School.

THE H. R. BARKER COMPANY, Lowell, Mass., have the contract for the piping and plumbing in the Shattuck Street Universalist Church.

THE CONTRACT for repairing the steam pipes in the Federal Building, Rochester, N. Y., the estimated cost of which is \$900, has been let to Roeber & Co.

A SEPARATE building for housing a system of water closets is to be erected in connection with one of the school buildings at Utica, N. Y.

GEO. B. MARTIN, New Haven, Conn., is building a fine residence in which specially fine plumbing will be required from the successful bidder for the contract.

THE FOSKETT & BISHOP COMPANY, New Haven, Conn., have the contract for the heating and plumbing in a new residence for H. C. Warren.

W. A. T. SMITH, agent for the Kelsey Heat Generator in New Haven, Conn., has recently placed heaters for A. E. Blakeslee, A. J. Carmichael, E. F. Wilson and E. A. Hopkins. Mr. Smith calls attention to the fact that by the peculiar construction of the Kelsey it is adapted for heating rooms in large houses, however remote from the heater. The hot air chambers are built in sections and by this means the hot air from any number of these sections may be directed to any particular room. It is claimed for the Kelsey that it has a large radiating surface and gives a great heat for the amount of coal burned.

SEALED PROPOSALS, addressed to Geo. W. Kerker, Davenport, Iowa., chairman of City Hall Committee, will be received at the office of the Board of Public Works until 2 p.m. Wednesday, March 27, 1895, for all labor and material required for the steam heating, plumbing, gas fitting, electric wiring, and for a complete electric passenger elevator, with all necessary machinery and fixtures, for the new City Hall, in accordance with the plans and specifications now on file in the office of J. W. Ross, architect of said building.

SHEAHAN & GROARK, New Haven, Conn., are doing the plumbing and furnace heating of C. M. Fisher's new house; they are putting two hot air furnaces in Dr. Cremin's house, two in L. P. Sperry's house, and they are doing the plumbing and steam heating in James F. Molloy & Co.'s new factory.

They are also thoroughly overhauling the steam heating of the Winchester Avenue Railroad car houses in West Haven and have put in between 2 and 3 miles of piping in the Fair Haven and Westville car houses.

GEORGE F. HAUSLEIN, 80 Fullerton avenue, Chicago, has the contract for plumbing and drainage in the residence of Louis Reemer, 1434 Marshfield avenue.

NELSON & CEDERHOLM, 87 West Ohio street, Chicago, have the contract for the plumbing and drainage in the flat building of J. Gustafson, 183 Richmond street.

WILLIAM READ, 345 Forty-third street, Chicago, is to do the plumbing and drainage in the 15 residences and cottages being built by W. Frenk on Blue Island avenue, Leavett street, Hoyne avenue and Oakley avenue.

FRANK FALK, 729 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the residence of J. P. Rusthoe, Mead street and Milwaukee avenue.

JOHN K. MORAN, 4139 Wentworth avenue, Chicago, has the contract for the plumbing and drainage in the flat building of G. Krahn, 1015 Fifty-first court.

JAMES J. DOYLE, 6040 South Halsted street, Chicago, has the contract for the plumbing and drainage in the flat building of B. F. Jones, Sixtieth and Aberdeen streets.

THE GEORGE ALIES ESTATE, 463 Division street, Chicago, has the contract for the plumbing and drainage in the store and flat building of Adolph Kruse, 2241 North Ashland avenue.

ERNST GARNER, 1740 Milwaukee avenue, Chicago, has the contract for the plumbing and drainage in the residence of E. Melins, 790 Wallace street.

JACOB E. HEDMAN, 656 West Division street, Chicago, is to do the plumbing and drainage in the flat building of William Ballman, 838 West Ohio street.

HARVEY & MOSE, 665 West North avenue, Chicago, are to do the plumbing and drainage in the flat building of B. Larson, 213 Evergreen avenue.

BYRNE & RYAN, 254 Forty-third street, Chicago, are to do the plumbing and drainage in the flat building of T. J. Davis, Sixty-fourth street and Evans avenue.

DORE & SON, 1042 West Van Buren street, Chicago, have the contract for the plumbing and drainage in the flat building of W. Farson, Birch and Kendall streets.

CHARLES C. BREYER, 187 West Division street, Chicago, has the contracts for the plumbing and sewerage in the flat building of J. H. Dittmer, 483 Potomac avenue, and in the store and flat building of J. Palenske, 803 North Hoyne avenue.

JOHN C. HICKEY, 551 South Ashland avenue, Chicago, has the contract for the plumbing and drainage in the flat building of C. Kastler, 117 Edgemont avenue.

ROBERT C. MILLER, 897 West North avenue, Chicago, is to do the plumbing and drainage in the store and flat building of A. W. Wolff, 1485 same street.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until April 19 for a low pressure return circulation steam heating and ventilating apparatus

for the United States Post Office Building at Lima, Ohio. Drawings and specifications may be obtained from the office of the Supervising Architect, Washington, or from the superintendent at Lima.

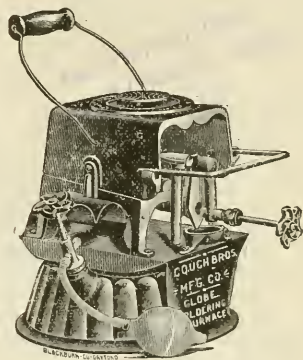
KEEFE & WARNOCK, 1105 Lincoln avenue, Chicago, is to do the plumbing and drainage in the nine cottages of L. P. Hammond, Gidding, and Lawrence avenues.

MORRIS BROS., 3442 South Halsted street, Chicago, are to do the plumbing and drainage in the store and flat building of W. Marks, 2953 Archer avenue.

ARNOLD W. ZIMMERMANN, 10,571 Meridian avenue, Chicago, has the contract for the plumbing and drainage in the residence of George Morrison, 104th and Charles streets.

The Globe Soldering Furnace.

The accompanying illustration shows the Globe soldering furnace manufactured by Couch Brothers, Dayton, Ohio. This new Globe furnace which the concern have brought out has a stationary generator so arranged that the flame will light the burner from the generator. Special attention is called to their new goose head generator, which is de-



The Globe Soldering Furnace.

scribed as an entirely new feature. The construction of the goose head is simple and very efficient in the production of gas. It is noted that the shape and construction of the burner is such that it will not clog up by the dripping of solder. It is said to be very quick in heating and melting metal and another advantage is its lightness, it weighing about 11 pounds and being but 10 inches in height.

A bill has been prepared for presentation to the New York Legislature authorizing the erection of a bridge over the East River from Grand street, New York, to Broadway, Williamsburg. The project meets with general approval, and it is proposed that the two cities unite in erecting the new structure in the same manner as was the case with the existing Brooklyn Bridge. The necessity of additional means of transportation other than by ferryboat is daily becoming more pressing, as the inhabitants of the Eastern District of Brooklyn have found to their cost on several occasions during the past winter when ice or fog have prevented the regular running of the ferry steamers.

THE TIN SHOP.

Pattern for Offset, Oblong to Round.

From E. S., *New York*.—In Fig. 1, let A B C D E F G H represent the elevation of an offset, oblong to round. A B G H represents the round pipe, C D E F the oblong, and B C F G the transition from oblong to round. In the plan, J K L M represents the round pipe, N O P Q R S the oblong, and J N S, L P Q the two triangles necessary to effect the transition. Two sections of cones are also shown by J K N O P L and J M S R Q L. As a cut through a cylinder oblique to its axis is an ellipse, the cut through the cylinder A B G H produced by the line B G will be an ellipse. A similar result will be produced by cutting the oblong C D E F

the half plan of oblong, as shown by D N O P E. Divide the semicircle N O P into any convenient number of equal parts, as shown by the small figures. With the blade of the T-square placed at right angles to D E, drop lines cutting C F. With the T-square placed at

cut on the line C F. In Fig. 3, A M H represents the half profile of round pipe, above which is drawn the elevation of same, as shown by A B G H. To obtain the shape of cut on line B G, divide the half profile A M H into the same number of parts as was N Q P,

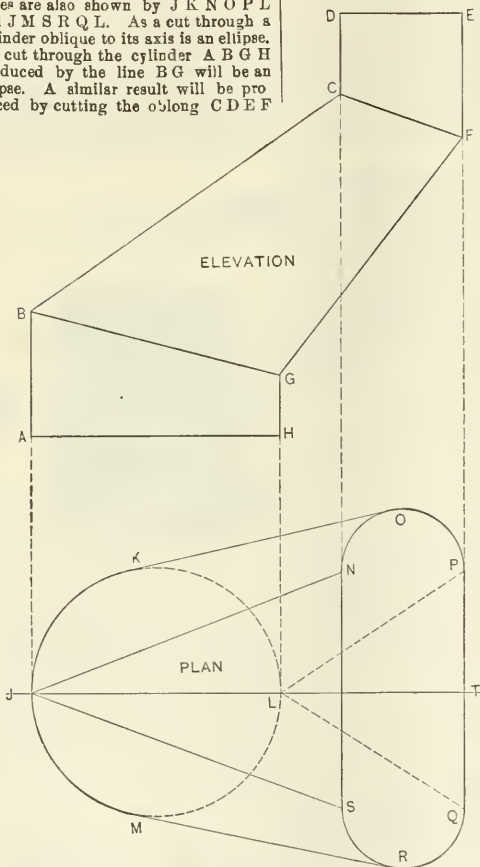


Fig. 1.—Plan and Elevation.

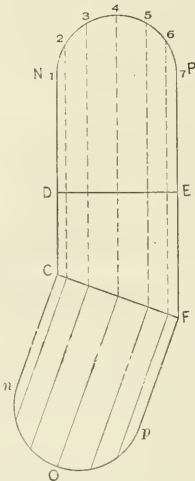


Fig. 2.—Method of Obtaining Shape on Line C F of Elevation.

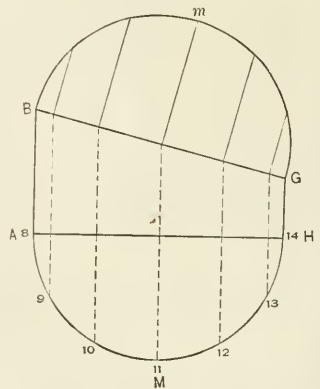


Fig. 3.—Method of Obtaining Shape on Line B G of Elevation.

PATTERN FOR OFFSET.

by the oblique line C F. In order to obtain the pattern of B C F G of elevation, it will be necessary to obtain the shapes on lines B G and C F.

In Fig. 2, C D E F represents a duplicate of oblong shown in elevation by similar letters. To obtain the shape of cut on line C F, proceed as follows: Above and in line with C D E F draw

right angles to C F, and brought against the points in C F, draw lines, extending them indefinitely, as shown. Measuring in each instance from C F, set off on the lines just drawn the same length as similar lines in D N O P E, and through the points thus obtained trace a line, as shown by n o p. Then C F p o n is the half shape of

and with the T-square placed parallel with A B, and brought successively against the points in A M H, carry lines cutting B G. With the T-square placed at right angles to B G, and brought against the points therein contained, erect perpendiculars, as shown. Measuring in each instance from B G, set off on the lines just drawn the same length

as similar lines in A M H, and through the points thus obtained trace a line, as shown by B m G. Then B m G is the half shape of cut on line B G. An inspection of the elevation will show that B C F G is the shape of that part of article on line J T of plan. In order to avoid a confusion of lines, a duplicate of B C F G is presented in Fig. 4. On C F is drawn the shape C n o p F in Fig. 2, and on B G the shape B m G in Fig. 3. Connect the points in B G with those in C F, as shown by the solid lines, and also by the dotted lines. The

up at right angles, to construct divisions that will give the distance from points in B m G to points in C n o p F,

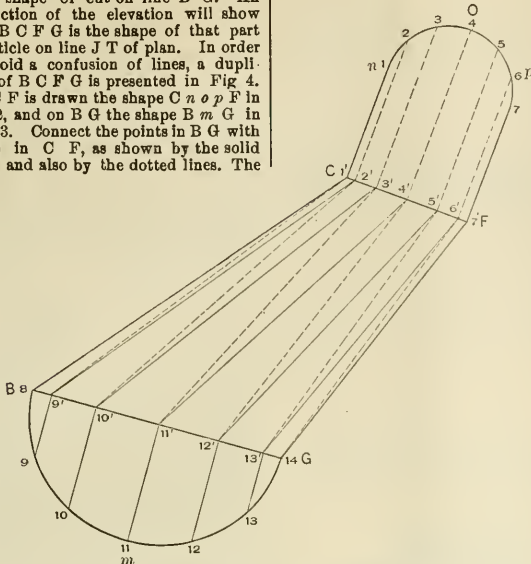


Fig. 4.—Divisions Drawn on B C F G of Elevation.

lines in B C F G of Fig. 4 are shown in Fig. 5. To construct these divisions proceed as follows: Draw the right angle U V W. From V, on V W, set off the length of lines in B m G, Fig. 4. From V, on V W, set off the length of lines in B C F G, and from the points thus obtained erect perpendiculars in length equal to lines of similar number in C n o p F, Fig. 4. Thus make line W 1' of Fig. 5 equal to line C n of Fig. 4, and draw V 1', which gives the distance from point B to point n in Fig. 4 as if measured on the finished article. Connect the perpendiculars drawn from V W with the points in V U, as shown, and corresponding with the figures in Fig. 4. Thus connect 1' and 8, 2' and 9, 3' and 10, &c. The divisions shown in Fig. 6, which correspond with the dotted lines in Fig. 4, are constructed in a similar manner. Draw the right angle X Y Z, and from Y set off the length of lines in C n o p F. From Y, on Y X, set off the length of dotted lines in B C F G, and from the points thus obtained erect perpendiculars, in length equal to lines of similar number in C n o p F, as indicated by the small figures. Connect the perpendiculars drawn from X Y with the points in Y Z, as shown, and corresponding with the figures in B C F G. Thus connect 1 and 9', 2 and 10', 3 and 11', &c.

In the pattern, Fig. 7, x s r g t represents the stretchout of C n o p F, as j m l does of B m G. To obtain the pattern shown in Fig. 7, using for the

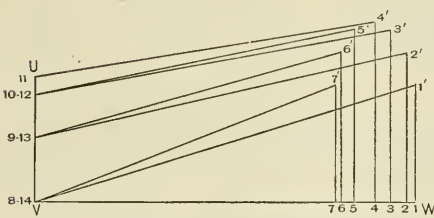


Fig. 5.—Divisions Represented by Solid Lines in Fig. 4.

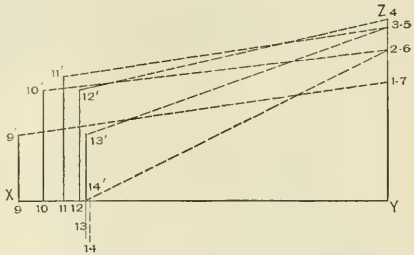


Fig. 6.—Divisions Represented by Dotted Lines in Fig. 4.

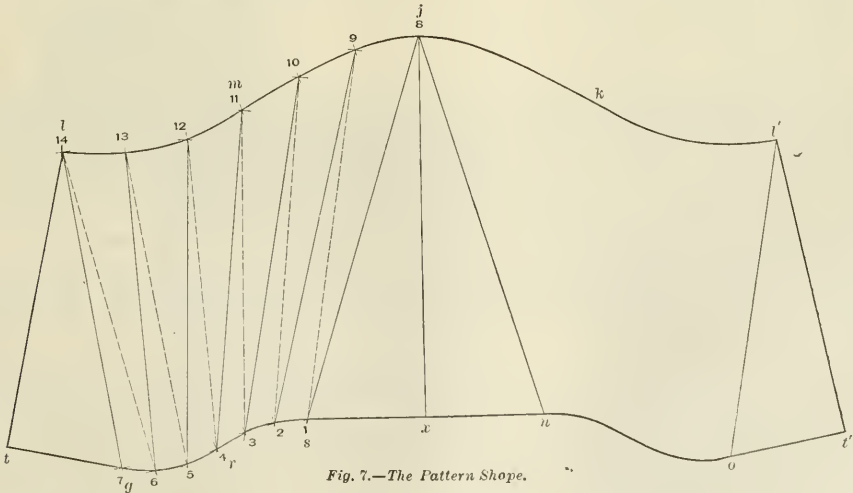


Fig. 7.—The Pattern Shape.

PATTERN FOR OFFSET.

method we shall pursue for obtaining the pattern will be as follows: Supposing B m G and C n o p F to be bent

as indicated by the solid and dotted lines in B C F G, Fig. 4.

The divisions represented by solid

purpose diagrams 4, 5 and 6, proceed as follows: At any convenient place draw the line j x of pattern in length equal

to V of Fig. 5. With x as center, with radius $W 1'$ of Fig. 5, describe a small arc. With j as center, with radius $V 1'$, describe a small arc intersecting the one just drawn, thus establishing the point s in pattern. Draw $x s$ and $s j$. From the point j as center, with $B 9$ of Fig. 4 as radius, describe a small arc, as shown; then, with s as center and $1 9'$ of Fig. 6 as radius, describe another arc intersecting the other, thus establishing point 9 of pattern. With point s of pattern as center, and $n 2$ of Fig. 4 as radius, describe a small arc, which intersect with one struck from point 9 as center, and $9 2'$ of Fig. 5 as radius, thus establishing point 2 of pattern. Proceed in this manner, using the tops of sections in Fig. 5 for the distances represented in pattern by the solid lines, the tops of sections in Fig. 6 for the distances represented by the dotted lines, the stretchout of $n o p$ for the distance between points in $s r g$, and the stretchout of $B m G$ for the distance between points in $j m l$. Trace lines through the points thus obtained, as shown. From g of

parallel to the stretchout line, and, bringing it successively against the points in $C E$, cut corresponding measuring lines. Trace a line through the points thus obtained, as indicated by $F'' C'$, which forms the desired pattern. In Fig. 3, $A B G H$ represents the round part of offset, as indicated by similar letters in elevation. $A M H$ is the half profile. The half pattern, as shown by $G'' B'' A'' H''$, can be obtained from Figs. 1 or 2, but as in the previous instance, for the purpose of avoiding a confusion of lines a separate diagram is used. To obtain the pattern divide the half profile $A M H$ into any convenient number of parts. Place the T-square

that the town of Staunton, Ill., began tapping the mains a week ago and are using the Star coupler exclusively in making the necessary connections. The same thing prevails in Venice, Ill.

The Hardening of Aluminum.

A tale which savors strongly of the romantic has come from Canada to the Boston Herald, and, after publication in that journal, has been reprinted in nearly all the daily and weekly newspapers. It is to the effect that F. Allard, the Canadian blacksmith "whose rediscovery of the lost Egyptian art of hardening copper stirred the mechanical world some three or four years ago," has recently succeeded in hardening aluminum, so as to give it the consistency and resistance of iron. According to the story, Mr. Allard has made a small cannon out of his hardened metal from which he is alleged to have obtained some astonishing results. The personality of the discoverer, as detailed in a special dispatch from Quebec to a leading New York paper, is calculated to heighten the impression of romance which surrounds this tale, being very suggestive of the ancient alchemists with their mysterious ways and occult arts. He is described as being an aged man who works in seclusion and who is very likely to die without revealing the secrets of the hardening of aluminum and copper which he holds, unless he is adequately rewarded for the discovery, the inference being that no time must be lost by capitalists in pay-

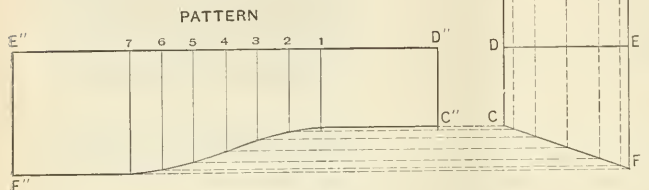


Fig. 8.—Half Pattern of Oblong Part.

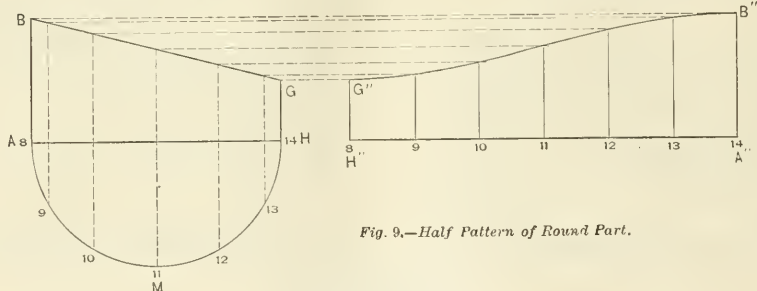


Fig. 9.—Half Pattern of Round Part.

PATTERN FOR OFFSET.

pattern as center, with radius $7 7'$ of Fig. 5, describe a small arc, which intersect with one struck from l of pattern as center and radius $V 7$ of Fig. 5, thus establishing point t of pattern. Draw lt and tg , which completes the half of pattern. The other half can be obtained in a similar manner or by duplication.

The pattern of oblong part of offset, as shown by $C D E F$ of elevation, or $N O P Q R S$ of plan, can be obtained from Figs. 1 or 2, as may be desired. To avoid a confusion of lines the half pattern is obtained, as shown in Fig. 8, in which $C D E F$ represents the elevation and $D N O P E$ the half profile. To obtain the half pattern proceed as follows: Divide $N O P$ of profile into any convenient number of parts, as indicated by the small figures. Place the T-square parallel with $C D$, and, bringing the blade successively against the several points in the profile, drop corresponding points on the miter line $C F$, as indicated by the dotted lines. On $D E$ extended lay off a stretchout of $D N O P E$, and through the divisions draw the usual measuring lines, as shown. Place the blade of the T-square

parallel with $A B$, and, bringing the blade successively against the several points in the profile, drop corresponding points on the miter line $B G$. On $A H$ extended, as $H'' A''$, lay off a stretchout of $A M H$, and through the points thus obtained draw the usual measuring lines, as shown. Place the blade of the T-square parallel with the stretchout line $H'' A''$, and, bringing it against the several points in $B G$, cut corresponding measuring lines. A line traced through the several points thus obtained, as indicated by $G'' B''$, will form the desired pattern.

The Star Coupler Company, St. Louis, Mo., advise us of an order of considerable dimensions just received from the War Department of the United States to be delivered at Madison Barracks, Sackett's Harbor, N. Y. This order is the result of a sample lot sent in December last which were thoroughly tested and which the consulting engineer of the barracks, E. C. Knowlton, reported he had tested and found satisfactory under all conditions. The Star Coupler Company also advise us

ing him for the precious secrets which he claims to possess. The rediscovery of the art of hardening copper, we are told, only failed to make the fortune of the ingenious blacksmith "because of the expensiveness of the process." Will the present alleged discovery prove any more profitable to the author or to the world at large?

The Chilean Government has announced its intention of buying up all the existing railroads in the Republic in order to place them under State management.

Rumors, which have been flying around with some persistence during the week, assert the probability of a consolidation of the great electrical manufacturing interests of the country, including such corporations as the Westinghouse and the General Electric companies, placing them under the control of Standard Oil capital. This new gobble of that omnivorous corporation has received a half hearted denial from several parties interested in the reputed deal, yet the news continues to be reiterated.

THE RETAIL STORE.

Iron Platform for Cisterns and Wells.

The Bucket Pump Company, Cincinnati, Ohio, are introducing an iron platform for cisterns and wells in connection with their bucket pump as here shown. The platform, Fig. 1, is made

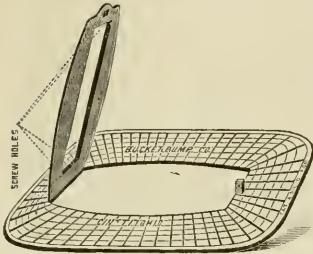


Fig. 1.—Iron Platform for Cisterns and Wells.

in two parts, the center portion being hinged, permitting it to be opened at right angles, leaving an opening 16 x 24 inches in size. The platform is corrugated, having an outward fall, also a small flange at the edge of the opening in the movable portion, into which the curb sets, to prevent filth, sediment, debris, &c., coming in contact with the water. The flange is fitted closely to the lower edge of the pump curb to prevent the water spreading and causing the curb to decay. The curb is

the cistern or well, without removing screws, bolts, pump or platform, when it is desired to make repairs either to the cistern, well or pumping apparatus. The curb in such cases is turned back, when the chains swing back out of the way. When the repairs have been made the curb is turned again into position and a cotter is passed through the small lug at the front of the curb to hold the whole firmly in place. The manufacturers refer to the platform as strong, easily placed in position, and as inexpensive.

The Champion Roaster or Oven.

Illustrations are herewith given of a small portable oven which has just been brought out by the Leach Roaster &



Fig. 1.—The Champion Roaster or Oven.

Baker Company of Paxton, Ill. The oven is compact in form and the shape makes it convenient to be used with great advantage on gasoline, gas, oil or

There are numerous uses for small portable ovens of this character which will suggest themselves to those who are familiar with cooking requirements. One special use is mentioned, however,

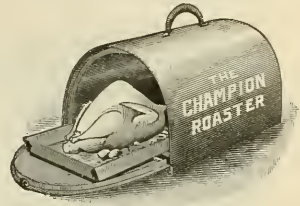


Fig. 2.—Roaster or Oven in Use.

in the fitness of this oven for camping parties.

West's Dust Pan.

James R. West of Gas City, Ind., is manufacturing the new dust pan which is herewith illustrated. It has a tread extending from the bottom of the



West's Dust Pan.

pan, upon which the foot of the operator can be placed, which holds the pan firmly in position, enabling it to be used with a broom, thus avoiding the necessity of getting on the knees with a brush or stooping over. The pan has a large hood and the handle is very conveniently arranged.

REPRESENTATIVES of the various hardware firms of Milwaukee, Wis., met on the 11th inst., and decided to accept the proposition of the Milwaukee Gas Light Company in regard to selling gas ranges. From April 1 to August 1 gas ranges without water heaters can be bought at about half price and in addition the gas company will set the stoves in position, lay pipe and make connections free of charge. The company will pay to the hardware dealers the difference between the regular price and the new price.

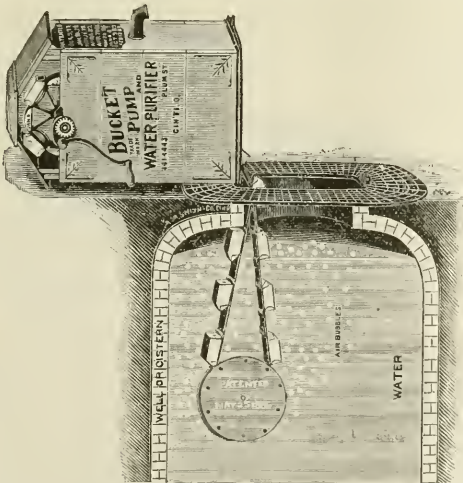


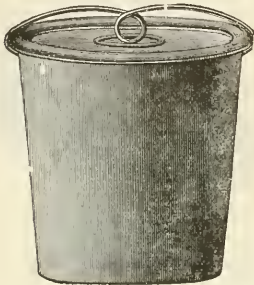
Fig. 2.—Pump Attached to Platform.

permanently attached to the movable portion of the platform, as in Fig. 2, by screws, the position of the screw holes being shown in Fig. 1. This arrangement permits of ready access to

coal stoves. It only requires a moderate heat and is stated to be practically automatic in its functions, requiring no basting. It has an air chamber which diffuses the heat equally throughout.

Porcelain Lined Milk Delivery Can.

The Stuart & Peterson Company, Burlington, N. J., have augmented their line of Golden Crown ware by the addition of the porcelain lined milk delivery can here shown. It is made of cast iron, has a porcelain lining, and is supplied with either glass or porcelain lined iron covers. The article is designed to supersede glass jars and tin cans, over which it is said to possess an advantage, inasmuch as glass jars readily break and tin cans rust, and both have small necks which condense foul odors in cleaning. Another advantage it pos-



Porcelain Lined Milk Delivery Can.

sesses is that it may be placed on a stove and the milk sterilized. It is made in sizes holding one and two quarts.

Stove and Hardware Dealers Along the Hudson River.

BY HENDRICK.

At the foot of the Catskill Mountains and along the western shore of the historic Hudson are many flourishing towns in which will be found enterprising stove and hardware dealers.

At Catskill, N. Y., Day & Holt have been doing business for the past ten years. The firm is composed of J. Day and Samuel Holt. Mr. Day is also secretary of the Catskill Savings Institution, so that he devotes but little time to the hardware business. Mr. Holt can always be found in his office attending to the details of the business. The firm carry a large stock of heavy and shelf hardware, mechanics' tools, agricultural implements, stoves, ranges, &c. Of late they have given up considerable of their floor space to bicycles, which has grown to be an important branch of the trade. The Western Wheel Works' Crescent and the Overman Wheel Company's Victor are the leading goods handled by them. The firm also do a large plumbing, steam and hot water heating business, representing the Boynton Furnace Company of 214 Water street, New York. They have had excellent results from their hot water and steam heaters during the past winter. Mr. Holt is a firm believer in selling one line of ranges and stoves, and during the past four or five years they have pushed the sale of the Rochester Co-operative Stove Company's Red Cross ranges and stoves.

At the corner of Church and Main streets Russ & Beach have been doing business since 1860. They carry a large stock of general hardware, stoves, ranges, &c. Their leading lines of

parlor stoves are the Fuller & Warren Company's, P. P. Stewart and the Splendid Diamond. Probably no other dealers along the Hudson River have sold more West Shore ranges than this concern, their sales running up in the hundreds on this popular range. They enjoy a good trade from the farmers, their place of business being conveniently located at the head of the street where they drive in to town.

Peary & Lobdell, in 1891, succeeded Brooks Brothers, and now occupy the large store on Main street, where they carry a stock of hardware and stoves and do a general tin and plumbing business. They enjoy a large trade on Rathbone, Sard & Co.'s Acorn and Phillips & Clark Stove Company's Andea ranges and stoves. The young men have been very successful since their start in business four years ago.

The Richardson & Boynton Company are represented in Catskill by Adams & Spencer, who do a thriving business in steam and hot water heating, plumbing and tinning. They have built up a good trade on the company's Perfect line of ranges and furnaces.

Henry T. Jones & Son do considerable in tinning and plumbing. This firm are an important factor in the completion of Catskill's plumbers and tinners.

Ten miles up the Catskill Mountain Railroad is the summer resort of Cairo, noted in summer for city dudes and in the winter for its immense snowbanks. It is here that Decker & Olmsted have a model country tin and hardware store. They carry a good stock of hardware, tinware, stoves and agricultural implements, their leading line being the Syracuse Stove Company's Welcome ranges and heaters.

Frank M. Halstead carries on the stove and tin business at Ravens, selling the Fuller & Warren Company's Splendid Diamond and P. P. Stewart stoves.

At the same place is A. M. Stuvill, who sells the Perry Stove Company's Argand line. He also carries a line of hardware, and does a general tin and jobbing business.

J. B. Holmes & Son carry on the stove and tin business at Coeymans. Mr. Holmes senior is an old settler in that part of the country, having started in business long before the late war. He often looks back, and refers to the time when they made their own tinware from plates free from the pin hole difficulty which is so prevalent among the tin plates of to-day. They carry a line of hardware, tinware and stoves, selling the Fuller & Warren Company's line of Splendid stoves, which have had a large sale with them.

At Coxsackie W. R. Church has been in business for many years, and carries a complete line of heavy and shelf hardware, tin, wooden ware and agricultural implements. He enjoys an excellent trade among the farmers for many miles back in the mountains. His leading lines of ranges and stoves are the Rochester Co-operative Stove Company's Red Cross, Van Wormer & Co.'s American heater and D. G. Littlefield's famous West Shore range.

W. A. Edwards occupies a large store on the main street, where he carries on a thriving business, selling the Perry Stove Company's Argand and Orr, Painter & Co.'s Sunshine. "Will," as he is known among the traveling men, pre-

fers at any time to sit with them and tell funny stories rather than to buy goods, and he has many funny ones in store for those who are yet to visit him. He has recently remodeled his store, and it now presents an attractive appearance, and he will, no doubt, continue to enjoy a good trade among his many friends as in the past.

MEMORANDA.

HAMMER & FOWLKES have succeeded to the stove and hardware business at Bakerville, Tenn., formerly conducted by W. H. Fowlkes.

WADE BROTHERS, Prattsville, N. Y., have succeeded A. M. Allen, dealer in hardware, tinware, stoves and crockery.

THE G. S. BLODGETT COMPANY, Burlington, Vt., have purchased the stock and good will of A. B. Kingsland & Co., of the same city, who have been dealers in stoves, tinware, &c., and have also conducted a plumbing, gas and steam fitting establishment. This consolidation makes the G. S. Blodgett Company one of the largest heating and plumbing concerns in northern New England. The latter firm have for a number of years done a large business in the above lines, and besides are known to the trade generally as manufacturers of the Blodgett portable oven, which is especially adapted for use in hotels, restaurants, steamships and large institutions, and is also used for janneting, core baking and the manufacture of confectionery. This business was established over 40 years ago by Blodgett & Sweet. The ovens were first manufactured by this concern and are now known all over the world. This firm continued for 20 years and then were succeeded by G. S. Blodgett and E. P. Manor, under the style of G. S. Blodgett & Co. Ten years later Mr. Manor died and George H. Holden took his place in the firm. The concern were incorporated in 1892 and continue as the G. S. Blodgett Company.

C. SIDNEY SHEPARD & Co., Chicago, Ill., issue a pretty little leaflet with the title "A Few Words About Aluminum and Aluminum Kitchen Utensils." The two inside pages give some interesting facts about aluminum covered by an article recently printed in *The Metal Worker*, from which long extracts are made. On the back of the leaflet it is stated that they have in preparation a catalogue of aluminum articles, some of which they mention by name.

E. E. KOHLER has purchased the stock of hardware of M. D. Comstock, Byron, Mich., and will continue the business and will likewise carry on a tin shop, which has been his line of work.

The returns of the Chief of the Bureau of Statistics at Washington for the month of February show that the imports into the United States during the month exceeded the exports by \$2,017,809. In February, 1894, the exports exceeded the imports by \$11,812,190. During the eight months ended February 28, 1895, the excess of exports over imports was \$91,967,932, and the excess for the corresponding period of the preceding year was \$218,061,832.

The Pennsylvania State Legislature has passed a bill appropriating \$500,000 for the improvement of the channel of the Delaware River.

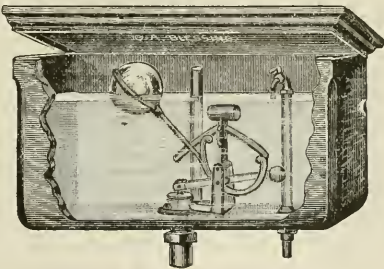
PLUMBING and GAS FITTING.

Public Conveniences.

The large cities of the United States are wretchedly equipped with public conveniences. The rule to leave the public to provide or do without them is so general that even the exception to prove it is difficult to discover. The need of these public conveniences was never made so clear as by a recent order from one of the public departments of the city of New York. It commands that none of its employees shall enter saloons during working hours, which, on its face, seems commendable. These employees, however, are collectors of ashes, garbage, &c., and would not be permitted to use the urinals and closets of stores, restaurants and hotels by the proprietors. The order has been broken by honest, hard working, well meaning men, who, as a result, have been discharged. If proper public conveniences were provided at frequent intervals throughout the city this hardship would not have been incurred, and owners of property having an open alley or driveway would have fewer nuisances to complain of. The plumbers would do well to bring their influence to bear on this matter.

Universal Urinal Tank.

C. A. Blessing, Philadelphia, has patented and is introducing to the trade the Universal urinal tank shown in the illustration herewith, which is designed for flushing urinals, hoppers and latrines. The tank is simple in construction and is described as being absolutely reliable in operation. The



Universal Urinal Tank.

parts are few in number. There is no ball cock used, the water entering by the supply pipe and cock seen at the right of the cut. The valve is operated by a balanced lever controlled by a fork which is combined with the valve stem. When the water entering the tank reaches a point about 1 inch from the top the ball float reaches its highest point and the end of the fork nearest the ball strikes a lug on the

front of the weighted lever balance, causing it to fall on the disengaged end of the valve lever and thus open the outlet. As the water is discharged and the float falls, the fork from the other side turns the balance weight over again, thus closing the valve. The tank then fills for another discharge. The discharges are regulated by the supply cock, which may be set to admit more or less water according to the number of flushes required. The tank fittings are adapted to small tanks as well as large by simply bending the fork to bring the ends closer together. The tanks are furnished in cherry, ash, oak, maple and walnut.

James M. Heatherton.

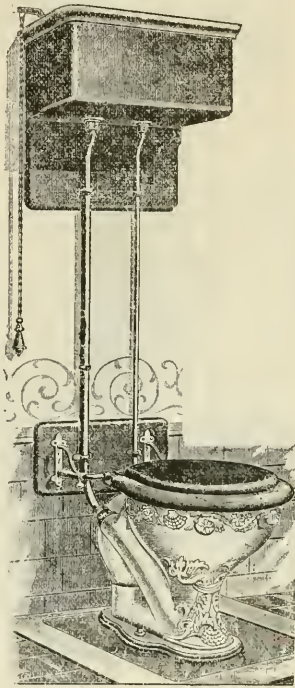
The many friends of James M. Heatherton in the plumbing trade will learn with regret of his death on March 20, at his home, 773 Monroe street, Brooklyn, N. Y. The funeral services will be held at the house at 1 30 p.m. to-day. Those who desire to attend should take the East New York elevated road at the Brooklyn Bridge and stop at Gates avenue station. Mr. Heatherton was born at Albany, N. Y., in 1841, and at an early age was apprenticed to Ridgway & Rues of that city, at the plumbing trade. He left their employ and opened a plumbing shop in New York in 1859, where his trade grew, and he at one time ran three shops at 159 Mercer street, 35 Ann street and at 1690 Third avenue. He continued in the plumbing business until 1887. Among his notable jobs was the plumbing in the Post Office Building, which is now being remodeled. In 1880 the *Plumbers' Trade Journal* was started and later occupied his whole time. Mr. Heatherton entered the late war as a private, but rose to the rank of colonel at its close, and was a member of a

number of social and secret societies. He leaves a widow, three sons and four daughters.

SANITARY EXPERT THOMAS S. AINGER of Detroit has made his report to the Board of Health of Saginaw, Mich., and strongly condemns the sanitation of the court house and jail. The supervisors will be called upon to remedy the defects as speedily as possible.

The New Era Siphon Closet.

A new combination siphon jet water closet is shown in the picture herewith, and is called the New Era by the manufacturers, the John Douglas Company, 162-166 Poplar street, Cincinnati, Ohio,



The New Era Siphon Closet.

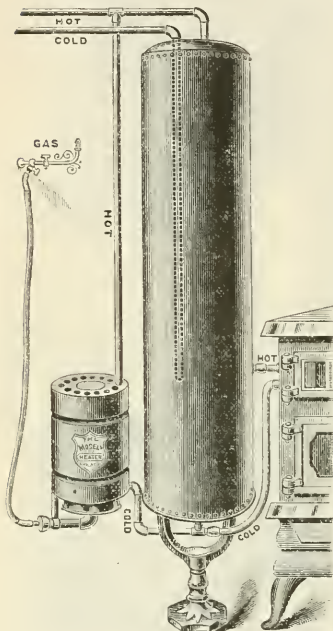
who also have a branch house at 131 Lake street, Chicago, under the management of Geo. L. Bottom. The closet is of ornamental design, and so constructed, it is claimed, that it works noiselessly, discharging its entire contents at once. The wood work in the seat, flush tank and bracket support is well finished and in a way to stand hard service. The seat and cover are detached from the closet and supported by means of brackets secured to the wall. For roughing in, 12 1/2 inches should be allowed from the face of the wall to the center of the outlet of the closet. Every closet is tested and all the metal trimmings are nickel plated.

THE Board of Health and plumbers' inspectors of Cohoes, N. Y., held a joint meeting last week and adopted a set of rules and regulations similar to those in use in Troy. The rules were ordered printed in pamphlet form and published in the city newspapers. Following the joint meeting a meeting of the plumbers' inspectors was held and a committee consisting of Messrs. Bottom, Cady

and Swatling was appointed to draft by-laws, &c. The board also decided to visit the Troy Board of Plumbers' Inspectors and get an idea from them what was necessary to be done and have their duties defined.

The Mosely Circulating Water Heater.

The Mosely Folding Bath Tub Company, 161 South Canal street, Chicago, have brought out a new water heater, which is herewith illustrated. It is designed for use in connection with a range boiler, and is furnished with Mosely's improved gas, gasoline or oil burner, as desired. It contains 32 feet of copper coil. The illustration shows the method suggested for its use.



The Mosely Circulating Water Heater.

When connected in this manner the range or water heater can be used separately or at the same time. This method of connecting the heater affords the advantage of furnishing hot water at once and always drawing the hottest first. The manufacturers claim for this device high heating efficiency and minimum consumption of fuel. It is made in three styles of finish—polished black iron jacket, polished copper jacket and copper top, or nickel plated copper jacket and nickle top and fittings.

THOMAS J. CUSACK has removed from Fair street to his former old store, 45 North Front street, Kingston, N. Y., which he is having thoroughly renovated and improved. The basement is being converted into a modern workshop, while the main floor or display room is undergoing decided changes. One section will be devoted to an exhibition of garden hose and another to steam and hot water ranges, &c. A special feature will be one of the large show windows, which will be constructed and furnished like a modern bathroom.

Operation of Siphon Closets.

From S. C. P. C., Sioux City, Iowa.
—Will *The Metal Worker* be kind enough to give a theoretical explanation of the operation of a siphon tank and closet?

Answer.—The various tanks in use have many different kinds of valves, all operating on the principle of using the pull to put the valve in operation. Water from the tank rushes down the flush pipe to the closet, and if the pull is released at once the valve will resume its seat, and water will be drawn through an inverted U-shaped pipe or some construction answering the same purpose by siphonic action, and will continue until the water in the flush tank falls below the end of the short leg of the siphon, when the flush will stop and the tank fill up until the supply is cut off by the ball cock used in connection. The water, on reaching the water closet, by its construction is made to thoroughly scour and flush the internal surface of the closet, while a jet enters at the bottom of the trap and shoots toward the trap outlet. The shape of the waterway from the trap to the soil pipe is so arranged as to create a spray and retard the flow of the water through it so as to flush and fill the waterway from the closet to the soil pipe. Then, through a larger surface of water being exposed to atmospheric pressure in the closet than there is at the soil pipe, a siphonic action is induced and continued until the contents of the closet have been disposed of and the siphonic action broken. This occurs before all of the water from the flush tank has escaped and the after flow seals the trap.

Burst Pipes.

A plumber corresponding with an English journal in reference to pipes bursting from freezing gives an interesting account of some experiments as follows:

For trial, any strength pipe would do, but for a simple demonstration, take about 20 feet of light $\frac{1}{2}$ or $\frac{3}{4}$ lead pipe. Put a stop tap at one end and a bib tap at the other. Fill this pipe by a hose, shut the bib tap, then the stop tap tight, double the pipe with an easy bend, cut a hole through a wall into a warm room, then put the double pipe inside with the taps outside, and gradually draw them out about 1 foot at a time to allow them to freeze up from the taps, and by the time the pipes are nearly all drawn out the burst will take place in that part not frozen or last to freeze.

Again, take the same pipe, filled as before, and draw out one end only; the burst will then take place at the end not frozen or last to freeze close to the tap inside.

Again, take the pipe and fill it, then put the end with the bib tap inside. Open it, put a bottle or can to catch the water, and then draw out as before, and as it freezes it will push the water into the bottle, and no burst can or will take place on any part of the pipe swollen.

Again, take the same pipe as before, shut off both ends, expose it equally,

all at once, to frost; no burst will take place, but the pipe will be slightly expanded.

The expansion caused by freezing is great, and will burst almost anything. Why? Because there is no vent or escape for the pressure of the water; but if a passage is kept open to the center, or the last place of freezing, no burst will take place, not even a bottle, if it could be attended to.

Take a simple test, as I have done—a water butt; let it freeze, and before it is half frozen it will burst the butt. But keep the center open with a small iron rod, and though it may get solid, it will not burst. Why? Because the hydraulic pressure is taken away.

Burst pipes are caused by expansion in freezing and forcing the unfrozen water between two given points, and by hydraulic pressure expanding the pipe until it is relieved by a vent.

It is on this principle that pipes are burst by the sudden stoppage with the old fashioned half turned taps. Hence the introduction of the screwdown taps. This I have experienced many times of old when the high pressure of town water was introduced. The burst in these cases is exactly like that by frost.

TRAPS AND VENTS.

REPRESENTATIVE REVELL has prepared, and will introduce into the Illinois Legislature at the first opportunity, says a Chicago daily, a bill to compel gas companies to supply to consumers prepayment meters. The prepayment meter is operated on the slot machine plan. The consumer drops a coin in the slot and a certain quantity of gas is produced. These meters are in use in some of the cities of Europe. It is estimated that if this bill becomes a law it will involve an expenditure for meters by Chicago gas companies of about \$5,000,000.

THE PROPERTY of the Cleveland Gas Fixture Company was recently purchased in the Probate Court and will be operated by a new company to be known as the Cleveland Gas & Electric Fixture Company. The new company elected officers recently as follows: President, R. E. Gill; vice-president, Bernhard Schatzinger; treasurer, B. G. Tremaine; secretary, H. L. Taylor. The officers and L. Poplowsky constitute the Board of Directors.

DENNISON, OHIO, it is reported, has raised \$30,000 and secured 20 acres of land which is to be used as an inducement to James B. Clow & Son, Chicago, to locate their pipe works there, their works at New Philadelphia having been destroyed by fire.

JOHN VAN DE VELDE has moved his plumbing and steam heating establishment to 27 East Third street, Danbury, N. Y.

B. P. CONNEALY has been appointed Pumping Inspector at Waterbury, Mass.

JAS. F. DUFFY, 124 Main street, Hartford, Conn., has been fitting up his store in a handsome manner so as to display to the best advantage the fine plumbing fixtures, including porcelain tubs, marble lavatories, closets of various kinds and the accompanying nickel work. In the heating line he carries the boilers made by the American Boiler Company.

SINCE ZALMON GOODSELL has become president of the Builders' Exchange, Bridgeport, Conn., the membership has grown from 10 to 70, and the value of the exchange is being appreciated.

GEORGE H. FARRELL, Westfield, Mass., has repaired the damage done his plumbing establishment on Arnold street by fire, and is ready for business again.

THE CITIZENS' GAS COMPANY, Bridgeport, Conn., will establish a plant as soon as possible to supply fuel gas to factories and dwellings.

R. D. WALLACE and H. J. PLOCK have arranged to open a plumbing, steam and gas fitting establishment in Seneca Falls, N. Y.

ALLEN & WARD, Athol, Mass., have made extensive alterations and enlargements at their plumbing shop in Car-dany's Block.

THE PLUMBING SUPPLY HOUSE of Geo. D. Kimber & Co., Brooklyn, N. Y., sustained damage last Sunday night from water used on a fire in the upper part of the building they occupy.

F. J. STURN, Newark, N. J., has taken a store adjoining his plumbing establishment, which he will fit up as a showroom for gas and electric lighting fixtures, and will make a fine display of modern plumbing fixtures.

S. B. PARKER of Goldboro, N. C., who has been running a plumbing and tinning business for 15 or 20 years, has opened a branch in New Berne, with headquarters on Craven street.

ACCORDING to newspaper report electric heat has been applied with success to the thawing out of frozen water pipes in England. A wire is run into the pipe until it meets the obstruction, and then the current is turned on.

E. L. POWELL, Atlantic Highlands, N. J., was a visitor at *The Metal Worker* office this week. Mr. Powell has invented several devices that have proven useful to the plumber.

C. H. ROLLINS is remodeling his plumbing store in Watertown, Mass.

PLUMBING INSPECTOR SIBBEN of Kansas City, Mo., has prepared a new plumbing ordinance. The old law contains some sections which, although good when written, are now said to be objectionable. A meeting of master plumbers took place last week to discuss the new ordinance. The two chief bits of contention were the proposed examination of plumbers as to qualification and outside sewer drains from the basement, with fresh air inlets, instead of a circulation pipe through the roof. It was voted to require the circulation pipe. At present the law requires a fresh air inlet on the soil pipe between the main trap and the house. It is claimed that the extension of a pipe or stack through the roof will vent vapors and stop a nuisance that the old system causes. Another interesting point is that of prohibiting unflushed vaults along the lines of the sewers. Health Officer Waring contends that the thousands of unflushed vaults are the gravest menace to public health.

LE BLOND-MATTOON PLUMBING COMPANY have been incorporated at Sheboygan, Wis., with a capital of \$5000. The incorporators are Sarah Le Blond, E. B. Mattoon and Emma G. Mattoon.

THE MASTER PLUMBERS of Cleveland, Ohio, met last week in the rooms of the Builders' Exchange and listened to the report of Daniel Roberts, chairman of the committee which represented the Cleveland organization at the recent convention of the master plumbers in Cleveland. The master plumbers desire to bring about State and national

legislation which will establish uniform rates and methods for plumbing.

THE WHITAKER SUPPLY WORKS, Kokomo, Ind., manufacturers of plumbers' brass goods, have sold out to Henry Goelitz of Chicago, who will immediately double the capacity of the works.

AMONG the new plumbing establishments that have recently been established in Chicago can be mentioned the following: D. G. Monteath, 1558 West Harrison street; Thomas M. Joyce, 32 Pine street; John G. Henzel, 3506 Vincennes avenue; Mark Abrahams, 3456 Cottage Grove avenue; E. F. Anderson, 286 Western avenue; F. P. Gleason & Son, 12 Quincy street; Machalitzky & Luria, 885 Twelfth street; Levy & Son, 4009 State street; Henry Schmidt, 3463 Irving street; Wilson Sanitary Plumbing Company, 3341 State street; William F. Reimneeth, 4849 Hoyne street.

AT A MEETING, last week, of the Shuster Foundry Company, South Pittsburg, Tenn., F. H. Shuster of Philadelphia was elected president, and Joseph Lodge of South Pittsburg, vice-president.

THE CITY COUNCIL of Kokomo, Ind., has taken preliminary steps toward putting in an entirely new system of sewerage during the coming summer, which will provide employment for some hundreds of laborers.

"THE MONSON MAINE SLATE COMPANY" is the title of a neat brown covered pamphlet calling attention to the products of this well-known company, whose Boston office is located at 113 Devonshire street. The first pages give prices, with list of sizes and other particulars, of Monson Maine unfading black roofing slates. Then the company refer to their slate stone products for other purposes, such as urinal stalls, blackboards, wainscoting and capping tile, kitchen sinks, cisterns, laundry tubs, bathroom and vestibule floors, closet seat slabs, register borders, &c. Accompanying the tables are prices and likewise circulars, in which the company give further particulars of these goods.

ARTHUR F. MAYHEW has gone into the plumbing business and opened a shop at 5 Lowell street, Peabody, Mass.

E. T. FORD has opened a steam and hot water heating and plumbing shop at Hanover, N. H.

ROW & BENZ, plumbers, 258 South Ninth street, Reading, Pa., will dissolve partnership, and Mr. Benz will continue the business at the present place. Mr. Row will engage in the same business April 1 at 216 South Ninth street.

IN *The Metal Worker* of March 2 we announced the dissolution of the firm of Hughes & Stephenson of Montreal, Canada, and said that W. A. Stephenson retired from the firm. This may have given the wrong impression that Mr. Stephenson was going out of business. This is not the case, however, for he has leased the premises at 36 Victoria square, corner of Craig street, Montreal, Canada, where under the firm name of W. A. Stephenson & Co. he will carry on a general plumbing, heating, gas fitting, lead burning and electric business. In his announcement he states that he enjoys special facilities for purchasing goods from the leading manufacturers, and has in his employ skillful and practical workmen in the several branches.

N. S. & P. C. STEWARD, plumbers and steam fitters, have leased the Littlefield Building on Elm street, Skowhegan, Maine.

THE CITY COUNCIL of Springfield, Ill., have passed an ordinance providing for the supervision of plumbing and drain laying, for the registration of plumbers and drain layers, to define the powers and duties of city officers and the duties and obligations of registered plumbers and drain layers and to authorize the collection of fees for inspection.

Wade's Plumbing Specialties.

J. J. Wade & Son, 276 Dearborn street, Chicago, have just brought out a fine catalogue of J. J. Wade's plumbing specialties. Mr. Wade is a most progressive and enterprising plumber, with the happy faculty of putting his ideas in practical shape for the benefit of the trade generally. His inventions have been brought out from time to time and quietly placed on the market. They have been known to be quite numerous, but even those most familiar with them will be surprised to learn how wide a field they cover, as shown collectively in this catalogue. The contents begins with the Accessible sewer flushing fittings, the object of which is to make the sewer pipe for house drainage always accessible throughout its length, as well as capable of frequent flushing at traps and other points likely to be fouled. The fittings connected with this system are of great variety, to cover every possible requirement. Then follows the Wade patent sectional flushing iron catch basin, built in sections, which can be bolted together, making a basin of any depth desired. The frequent flushing idea extends to this device also. Next comes the Wade accessible flushing iron catch basin, adapted for better blow off, drainage, or for all purposes requiring tight basins. This is supplemented by a sink flushing grease catch basin ejector. Another important improvement is the Wade automatic cellar drainer, for removing water from cellars, excavations, wheel pits, &c., which is operated by water pressure. An illustration is given of the Wade lead burning system, to join the edges of sheet lead or lead pipe so as to resist the action of acids. Next follow lead lined iron ventilation, soil, waste and supply pipe and fittings. The concluding pages illustrate the Wade siphon jet water closet, Centennial pedestal closet, Purity washout closet, Columbian flush rim hopper, Delaware lavatory, Delaware secret waste basin, Delaware plug basin, automatic basin lock valve trap, Delaware lavatory plug basin, Purity basin, &c.

THE PHILADELPHIA STEAM HEATING COMPANY, 1513 Filbert street, Philadelphia, have the contract for placing an extensive steam heating plant in the Real Estate Trust Company's building at 523 Chestnut street. It will cost \$6000. They will also put a \$2000 plant in the St. Thomas parish school building at Eighteenth and Fernon street.

A FIRE STARTED in a neighboring planing mill destroyed the Baldwin Refrigerator Company's factory, Burlington, Vt., on March 19. The company's loss is reported to be fully covered by insurance.

GROUND has been broken at Tifton, Ga., for a new iron and brass foundry.

ROOFING AND CORNICE.

Berger Bros.

231 and 237 Arch street, Philadelphia, have just issued what they claim to be the largest catalogue ever published in this country covering a line of tinners' hardware and roofers' supplies, pipe, pipe hooks and fasteners, furnace fittings and kindred goods. The catalogue contains 128 pages of heavy enameled paper, well printed and plentifully illustrated. Following the title page is an introductory announcement to the trade, in which the firm's appreciation of the patronage hitherto extended to them is expressed, as well as their intention to merit its continuance. Page 3 carries the terms under which they do business. The catalogue proper commences on page 4, which page with its follower is devoted to joint gutter. Next in order come miters and roof gutters, quarter circle, O. G. and box gutters. Gutter hangers follow, a large variety being shown. Page 13 and two following pages show Berger's new hinged shanks and circles, on which a patent is being sought. These shanks are claimed to combine great strength and variation, and allow the stems to hang close up to the cornice and the circles close to the shingles; several styles are shown, as well as suitable materials for their application. Trough and gutter hangers and fittings are next shown. Pages 20 to 25 are devoted to corrugated expanding, lock seam and spiral lock seam conductor pipe and fittings, and cast iron header shoes and sewer connections. Two pages are assigned to rain water cut-offs, filtering joints and strainers. Eight handsome designs of conductor heads follow, the designs being now published for the first time. Pipe fasteners and holders of all kinds occupy upward of eight pages. One page shows the B. B. pipe hanger, an entirely new article for use in a great variety of ways, above floor or under ceiling and side walls; it is said to be adjustable to any distance for single or twin pipes and is made in either plain or polished metal. Pages 38 and 39 show expansion bolts, stove bolts and rivets and burrs; and the two following pages cover sundry supplies and tools. Pages 42 to 66 are devoted to a general line of tinners' hardware, including cars, handles, shanks, rings, can screws and bottoms, knobs, stove turn buckles, roof irons and collar clamps; coffee pot and sad iron stands; lifters, lemon squeezer, valves and plungers, and speaking tube and fittings. Considerable space is awarded to sheet iron and zinc, corrugated sheet iron crimp roofing, pressed steel brick and rock face brick siding, roll steel roofing, continuous tin roofing, felt roofings, sheathings, asbestos felt, metallic paints, roofing and furnace cements. Pages 78 to 85 contain furnace fittings of all kinds, dampers being especially prominent. Coal hods, water buckets, stove shovels and pokers occupy two pages. Chimney ventilators and caps take up four pages; then follow galvanized iron ridgings; crestings, cresting blocks and finials are displayed on pages 94 to 111, many new and original designs being

shown. Galvanized iron cornices next appear, succeeded by hot air registers. The remainder of the catalogue is devoted to tools and articles of a miscellaneous character. A feature of the book is the number of fine illustrations used, the smallest article being deemed worthy of pictorial representation. The catalogue is bound in stiff paper covers of dark green color, having the firm's name and address on the front, embossed in gold, their lines of goods appearing within a conqueror's wreath, also in gold. The back page bears the firm's well-known trade-mark contained within a scroll. The firm will distribute the issue only to such tinners, tinware manufacturers, roofers, plumbers and architects as apply for them.

FLASHINGS.

POWERS & WILLIAMS, Streator, Ill., issue an eight-page circular calling attention to the line of goods which they manufacture and sell. The front page shows two styles of galvanized iron vases, while the next four pages show a number of different cornices, the dimensions and prices of which are given. The styles vary from the plainest kind of cornice to quite an elaborate construction. Other goods noted are crestings, skylights, chimney tops, window caps, &c.

A LITTLE memorandum book that will be useful for vest pocket purposes is issued by the Burdick Mfg. Company, manufacturers of roofing, cornices and skylights, who are located at 312-314 John avenue, West Superior, Wis. At the top of the blank pages are printed references to their business.

JOHN SEVERDING, Richmond, Ind., is making a new strap eave trough hanger which he commends to the trade. The hanger is very simple in design, and it is especially mentioned that it utilizes the narrow strips of galvanized iron and tin that have heretofore been thrown into the dump. The features of this new hanger are that it is particularly strong and substantial, being made of No. 15 hoop iron and wide strips. The cross bar is $\frac{1}{2}$ inch wide and a $\frac{1}{2}$ -inch strap goes around the gutter. The upright on the roof strip is $\frac{1}{2}$ inch wide, while a $\frac{1}{2}$ -inch strap goes through a slot at one end and is fastened with a rivet, and for this strip the galvanized iron or tin scraps are utilized.

LANDELL & SKELTON is the name of a new firm at Fayetteville, Ark., organized to deal in roofing and cornice materials, &c.

THE WHEELING CORRUGATING COMPANY, Wheeling, W. Va., have just issued their catalogue D 169. It is a volume of convenient size, handsomely published, bound in dark blue heavy paper, and contains 112 pages. In an introductory note, referring to the quality of their product, they state that their corrugated sheets are made from the best quality of iron, while their rolled roofings are made from the best

quality of steel, their pressed standing seam and V-crimped roofings being made of semi-steel. They state that they will not fill orders for this roofing of common iron, as it will not give satisfaction to their customers. The first goods noted are corrugated sheets. Illustrations are presented showing the style and size of the corrugations, and a few pages are devoted to directions for applying corrugated roofing to wooden framing. A variety of other corrugated sheets are shown. A new feature of the present catalogue is the steel roll and cap roofing with protected cleats, which is illustrated by a section of a roof showing the method of applying the sheets and their appearance when laid. With this are full particulars telling how to apply the roofing. Similarly steel roll and cap roofing with galvanized or outside cleats is illustrated and described. These are followed by other styles of roofing, pressed standing seam, V-crimped, &c. Among new goods are steel rock faced brick siding and steel stone siding, of which illustrations are shown. A few pages are devoted to their tin plates, of which they give a list of brands, $\frac{1}{2}$ x 24, &c. In the section devoted to conductor pipes there is shown corrugated square expanded conductor pipe made in 10-foot lengths, in addition to the others previously illustrated. Among the miscellaneous goods of interest to the roofing trade is the Rainbow rain water cut off, which is described as the best cut off made. Following these are shutters, eave troughs, hangers, &c. A new chapter in the catalogue of the Wheeling Corrugating Company is devoted to malleable crestings and finials, of which many pleasing designs are shown. Galvanized cresting blocks, hip caps, finials and vanes are likewise illustrated, the whole covering over 20 pages. Skylights with frames of galvanized steel or copper are illustrated, and a number of sections of crown moldings and raised moldings are presented. Following a section on cornices and miscellaneous goods comes a chapter devoted to their patent continuous steel ceilings and slide wall finish, of which some new and very handsome designs are shown. At the end of the volume is an alphabetical index.

WE ARE advised that the Old Bangor Company of Bethlehem, Pa., have joined the new organization, known as the Bangor Roofing Slate Manufacturers' Association, to which reference was made in our issue of last week. Thus all the manufacturers of genuine Bangor roofing slate are now united, and the maintenance of a uniform scale of prices in the trade will be secured.

THE PLANT of W. H. Mullins, Salem, Ohio, manufacturer of sheet metal and statutory work, is being equipped to burn oil by the system of the Thurman Fuel Oil Burner Company of Indianapolis, Ind. The furnaces, which will be used to anneal copper and zinc and to melt lead and zinc, will be 50 x 11 feet in size. Waste heat from the melting pots will heat the copper and annealing furnaces.

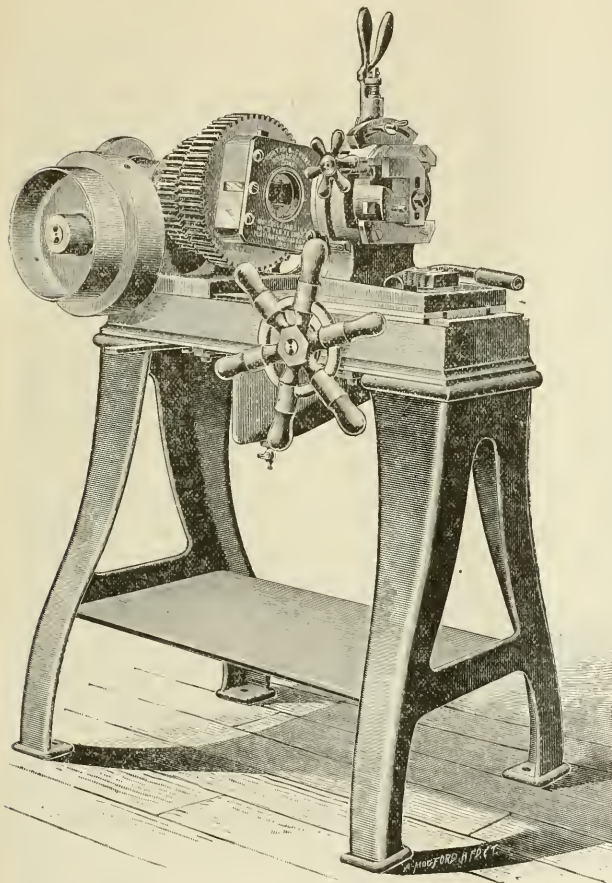
THE LATEST souvenir that has been issued by Gummey, Spering & Co., Philadelphia, is a most serviceable rule, and one that will be most appreciated by architects, for whom it is specially intended. The rule, of celluloid, is 12 inches long, folded in the middle. The advertisement is very simple and merely calls attention to Pennsylv Old Method, described as the finest quality of American roofing tin, and the Alderly brand is spoken of as a very choice quality of heavy coated roofing tin. The rule, which as mentioned is particularly for architects' use, is divided into 12 inches

foreign competition in the iron and steel trades, with a view to devising measures for the maintenance and stiffening of prices.

No. 20 Power Pipe Machine.

To meet a demand for a machine in which when the pipe revolves the dies are stationary, Curtis & Curtis, Bridgeport, Conn., have designed and placed on the market the machine herewith illustrated. A special feature to which the manufacturers allude is that all

clamped in position. The back stop shown on the right side of the die head is run down over the pipe, and the pipe cut off by turning the wheel on the side of the die head. All this cut off arrangement is self-contained and allows a movement within ways, so that if the pipe should be slightly bent or out of round it would move with it, and thus facilitate the operation. Should it then be desired to thread this end of the pipe, the lever shown on top of the die head is thrown over to the proper graduation on top of the machine, which brings the dies to the standard size for the size of pipe to be cut. Should there be found that the fittings to be used varied from the standard, the proper allowance can be made with this lever so as to cut over or under standard size. Should there be a number of pieces of the same size to be cut, as in making nipples, the block into which the lever engages can be set to size and the lever simply snapped back into it each time without resetting. This feature is of particular value where the machine is operated in a dark room or where unskilled labor is employed. The die-carrying head is then advanced by turning the hand wheel shown on the front of the machine, operated through a rack and pinion under the die head, and the dies lead on to the pipe. When the dies have advanced as far as desired the top lever is thrown back, which frees the dies from the pipe, the die head is drawn back and the pipe is removed without running back over the thread. This machine is arranged with two sets of gearing for rotating the spindle and pipe, each of which is adapted to give a different speed to the machine. A change of speed from one to the other is obtained by simply moving a convenient lever while the machine is running at full speed and without being obliged to stop. This feature, it is said, will be found of special value in changing from threading to cutting for where a higher speed is desirable. With a change of belt speed on the cone four speeds of machine are obtained. When desired the machine is fitted with a hand wheel which is attachable to the cone shaft, thus allowing the machine to be operated by hand power. Solid pipe or bolt dies can be used with this machine when desired.



No. 20 Power Pipe Machine.

and along each edge the divisions are made for different scales. On one edge is the $\frac{1}{4}$ inch to the foot scale, together with the ordinary even scale of 12 inches. On the other edge are two scales, one $\frac{1}{2}$ inch to the foot and the other $\frac{1}{4}$ inch to the foot. These are the common scales in use, and the rule is so plainly marked that its usefulness will be apparent to every one who is the fortunate obtainer of one.

A circular has been issued by the Scottish Iron and Steel Workers' executive to all trades unions in Great Britain connected with this industry suggesting that a conference of delegates should be called within the next three months to consider the question of home and

parts are made interchangeable so that duplicates can be readily secured. The gears are all cut from the solid block, and all working parts, it is stated, are finely finished to gauge. To operate the machine, the pipe to be cut off or threaded is run through the hollow spindle of the machine from the left, passing through the self-centering guide chuck shown at the left of the spindle and the self-centering vise at the right, and the die head. The pipe is then clamped by turning the screw in the vise, which not only clamps the pipe, but brings it central with the dies; by turning the hand wheel shown on the front of the machine the die head is moved so that the cut off tool comes opposite the point on the pipe where it is desired to cut, and can there be

United States Consul Bruhl, at Catania, Sicily, suggests to the State Department what he considers may be a good opening for American trade in that island. It is for the building of small frame houses of from three to five rooms, such as we usually term cottages, which can be shipped from this country for eventual erection in Sicily. Mr. Bruhl is led to the belief that this industry could be established and carried on profitably from the fact that in that country the frequent earthquakes damage and destroy the houses erected there, the builders not being sufficiently advanced in the building art to be able to meet the demands in their construction. Relying on the superior facilities of the American builder and the workmanship that would be used, the consul is convinced that the people there would readily adopt the American structures, as better calculated to resist the frequent shocks. He has interested himself in the subject to a considerable extent, and is anxious to obtain illustrated catalogues and other information from American manufacturers and builders to lay before the Royal Earthquake Commission, with a view to having the experiment tried.

TIN PLATES.

The Proposed Restriction of Welsh Tin Plate Production.

The close of the present month promises to prove a period of critical importance in the Welsh tin plate trade. On March 31 expires the term of the arrangement whereby the men at a number of the works in South Wales agreed to accept a temporary reduction of wages, averaging about 12½ per cent. When this agreement was arrived at the manufacturers were in hopes that an improvement in business might occur in the interval and that prices might advance to a more profitable level. Neither of these expectations has been realized. Business has, if anything, declined in volume, mainly on account of the slackness in the demand for tin plates from this country, and prices have dropped from 3 pence to 6 pence a box. Consequently the makers are in an even worse position than they were at the opening of the year, and are now in no condition to restore the old wage scale. The men on the other hand seem disinclined to a continuance of the present scale of payment unless their working time is reduced. According to the latest advices from the other side, the two interests are endeavoring to agree on a compromise. But the obstacles to any arrangement which will be agreeable to both the employers and the Tin Platers' Union are said to be considerable.

It seems to be generally conceded that a restriction of output is imperative. Judging by the business done last year, the productive capacity of the active Welsh works, even if limited to 36 boxes a turn per mill, exceeds the present average demand to the extent of about 100,000 boxes a week. This represents the surplus production which, accumulating, glutts the market and causes constantly falling prices. To avoid this evil, the newly formed Board of Control in the tin plate trade, composed of a number of the leading manufacturers, has suggested that in order to assimilate the make to the demand, production should, after March 31, be reduced one-third of the capacity throughout the entire number of mills. To make this rule effective it is proposed that every third week should be a "stop week."

This proposition has received the approval of a large number of the makers and, in principle, is favorably considered by the union. The main obstacle, however, to its general acceptance lies in the fact that the manufacturers who are most strongly pushing the plan happen to be those who at one time or another have been connected with tin plate ventures in the United States, and an impression has got abroad among many of the makers as well as the men, that these persons are not working for the best interests of the Welsh trade. As, however, nearly all of them are stated to be no longer financially connected with the American industry, the prejudice seems to be somewhat unreasonable; still, it exists, and as Welshmen are notoriously tenuous of a once

formed notion, the impression is regarded as likely to operate against harmonious action on this line.

The executive of the Tin Platers' Union have meanwhile issued a manifesto to the tin plate workers of South Wales, Monmouthshire and Gloucestershire, in which they approve the plan for the proposed assimilation of supply to demand by the stoppage of one-third of the capacity throughout the trade provided the men divide the work. "Employers of standing," runs the circular, "agree that this is practicable, and further contend that the action proposed will have the effect of advancing prices, and while we will be no party to secure artificial prices, which may encourage American competition, we submit that it is as much your duty to help employers to get fair prices as it is for yourselves a living wage. We welcome the assistance of employers and trust that few will be found so inhuman as to oppose this solution of our unemployed difficulty and their folly of having to sell plates under cost; but we wish to make it clear that our hopes and reliance rest upon tin platers realizing in due time their best and truest interests. Wage reduction agreements terminate at the end of March. You will be tempted to extend these arrangements. We ask you on no condition to do so unless your employers contract with you to permit two-thirds time being worked. If a successful stand is thus made, in all likelihood the standard wage rate will be yours within a short time and you will agree that to work six hours' shift with a full wage rate is better than working eight hours' shift with 12½ per cent. reduction. . . . Your executive in this way opens a course before you, which, if followed with the determination and enthusiasm characteristic of tin platers, will aid in removing misery and suffering, restore uniformity of conditions and do away with that mad competition destructive to the employer and intolerable to the tin plate workman."

A further conference between the manufacturers, represented by the Board of Control and the representatives of the union, is to take place, it is understood, before the end of this month, when strong efforts will be made to arrive at a basis of agreement. Want of sympathy with promoters of the present movement on the part of a large number of people in the trade is thought, however, to be adverse to any effective joint action. A strong party is said to be still desirous of raising the price of plates to a basis of 10 shillings and 6 pence or 11 shillings a box, while others again propose that by mutual concessions on the part of employers and employed, the former contenting themselves with no profit and the latter accepting a further substantial reduction in wages for a fixed period, the price of plates might be reduced so low as to practically kill American competition. Both these schemes are regarded, however, as unworkable in effect, and except for the prejudice in regard to its source, before mentioned,

the proposition offered by the Board of Control seems to be the only one that would command the assent of a majority of the makers and workmen.

SCRAP.

TWO OF THE black plate mills recently built by Ains-Standard Iron & Steel Company, Bridgeport, Ohio, have been put in operation, the first black plates for tinning having been rolled on Thursday morning, the 14th inst. Two others are about ready, and are expected to be rolling black plates within the next two weeks.

THE WHITAKER IRON COMPANY, Wheeling, W. Va., have started up four sheet mills which have been idle for the past six or eight weeks. Two other sheet mills in this plant, which have been working right along, have been closed down.

THE TINNING department of Meurer Bros. Company's works, 575-577 Flushing avenue, Brooklyn, which has been closed down for alterations and repairs, will start again into full operation on Monday. Messrs. Meurer report a good demand for their various brands of American tin and terne plates.

THE MACHINERY has all been received and is now being placed for the new works of the National Tin Plate Company, North Anderson, Ind. It is announced that the works will be in operation by May 1. When completed they will employ some 750 men.

THE ANDERSON FOUNDRY & MACHINE WORKS, Anderson, Ind., shipped last week three carloads of tin plate machinery to the new plant of the Monongahela Tin Plate Company, Pittsburgh, and one carload to that of the Great Western Tin Plate Company, Joliet, Ill.

THE TIN PLATE PLANT of the La Belle Iron Works, Wheeling, W. Va., is fast approaching completion. The machinery is being installed, and it is expected that the works will be in operation by May 1.

THE BOARD OF TRADE, Beaver Falls, Pa., has succeeded in raising nearly the whole of the \$20,000 bonus for a new tin plate mill, which it is proposed to locate at that place.

THE WASHINGTON IMPROVEMENT COMPANY of Washington, Pa., a concern who have been organized and chartered for the purpose of promoting the location of industries at that place, have, it is said, practically closed arrangements for the establishment there of a large tin plate mill.

WHEELING CORRUGATING COMPANY, Wheeling, W. Va., have started up a couple of stacks in their new tinning plant. The company purpose making both charcoal and bright tin, as well as roofing plates. According to their latest catalogue, just issued, the firm are making two brands of high grade hand redipped ternes, the Margaret and the Nelson, and two brands of rolled, full coated roofing plates, Elea-

nor and Wylie; besides three grades of bright charcoal and one brand of coke plates. They are also manufacturing and offering to the trade continuous roofing plates in their various brands, as well as flat seam tin roofing and tin valleys and gutters. In this manner they expect to consume a part of the output of their tin plate department themselves. The agent of the Wheeling Corrugating Company in New York City is H. C. Mechling, 81 and 83 Fulton street. They have also branch offices at Chicago and St. Louis.

F. A. VINAL, dealer in tin plate, sheet iron and metals at 124 Purchase street, Boston, Mass., has recently begun importing two special brands of terne plates, namely, Allston and Gem, which he is offering to the trade of New England.

THE FAMOUS BOTALLOCK tin mine in Cornwall, after being worked for over 200 years, is about to be closed, either permanently or until times are better, as it does not now pay to operate it. The Botallock is one of the most famous and frequently visited mines in the world on account of its picturesque situation near the wild Cornish coast and the remarkable engineering features connected with it.

THE MEN employed in the black plate mills of the Monongahela Tin Plate Company, at Pittsburgh, have been organized into the Amalgamated Association.

THE BRITISH BOARD OF TRADE returns for February show a large falling off in the shipment to the United States of black plates for tinning. They were only 451 tons, as against 2977 tons in the previous month. This is probably due to the large increase in the number of American mills producing these sheets which have come into operation since the beginning of the year.

GUMMEY, SPERING & Co., Philadelphia, advise us that they have not shut down their tin plate plant a single working day during the past quarter, such has been the demand for their brands of American tin and terne plates, many of which have become well known and appreciated among consumers. They call attention to a new brand of best bright coke plate, Champion, which they are now offering to the trade.

AMERICAN SHEET IRON COMPANY, Phillipsburg, N. J., are arranging for the addition to their plant of a second black plate mill.

Salt Lake Supplied with Natural Gas.

Salt Lake, Utah, is rejoicing over the final arrival of natural gas, which has been piped from the wells 14 miles distant. The completion of the first connection was celebrated by the illuminating of the main streets with flambeaux turned on at high pressure from the mains at the Temple Block. The supply is brought to the city by an English company and will be connected with the mains of the local gas company, who have contracted to supply a number of large local manufacturers and city consumers at a price low enough to displace coal as a fuel. The wells already improved have an aggregate output of 20,000,000 feet per day. The supply already available is ample for the entire demands of the city for domestic light and heat, with a good surplus for manufacturing purposes.

Capital and Confidence.

In business circles the one achievement which is devoutly hoped for, says *The Iron Age*, is a restoration of confidence. We find that a good many merchants and manufacturers interpret that phrase as a recovery of sufficient nerve among buyers to place more liberal orders, for more extended delivery. We believe that a deeper search will reveal that a sense of security on the part of capital is the most important influence bearing upon it. If that be true, then it needs much to overcome the disastrous effects of the developments of the past two years and the influence of current contentions. A review of recent industrial and commercial history appears to show that success could not have been more complete if the deliberate aim had been to frighten moneyed men into inactivity. Capital is proverbially timid, although it has its spells of reckless courage.

Whatever may be the merits of the questions involved in the great battle of the standards, this one fact will be hardly disputed, that the great majority of moneyed men are either uncompromising "gold bugs" or believe in bimetalism only when it is backed by the unqualified support of all civilized nations. So long as such men see before them the danger that power may pass into the hands of legislators representing what to them are crazy views, capitalists will keep their money idle.

It is curious that the same men who will resort to cajolery and to every means of persuasion to win the confidence and good will of capital when they want it for their own individual use and profit, believe that the best instrument of conviction against capital collectively is the club. The same men who rush to financial centers to secure money for the development of the resources of their native States and Territories at home make ringing speeches against the Shylocks. They recognize the power of money and yet attempt to overawe and domineer capital.

When business men, who ought to know better, resort to such bulldozing tactics, it is not surprising that workmen, piloted by their walking delegates, do the very acts which must prolong the sufferings against which they rebel. Every unreasonable strike, every act of violence, discourages enterprise and drives into the financial centers money, the employment of which would mean work for the idle and the needy. So long as no power exists to force capital into the channels of industry injustice and violence on the part of those who work for their daily bread must rest upon them.

There is another very serious cause for the timidity of capital, be it foreign or American, which should be frankly exposed, and that has been the laxity of business principles which has widely prevailed. The course of the managers of some of our great railroad systems now in the hands of receivers has been outrageous. The deliberate falsehoods uttered on the eve of failure have shocked that large class of security holders who may pardon a loss but never forget deception. The stock-jobbing on the part of officials, the juggling with accounts and the manipulation of corporate interests for private gain are scandals which have discouraged the flow of money into channels into which they went freely for many decades.

Revival can only come when conservative capital has become convinced that the lesson of the past few years has

been thoroughly learned. A speculative spirit can only develop after continued moderate successes have made the timid venturesome. The vast majority of the men speculators and boomers have nothing but the memory of past financial greatness left to them. The men of large means and solid wealth will be the first to seize the many opportunities for successful operations. But they, too, are the most cool headed, the ones who can afford to wait patiently, the ones who cannot be bulldozed, but must be convinced by clear evidence that irresponsible and dishonest attacks upon capital have ceased.

Furnace Fittings.

The Excelsior Steel Furnace Company, 33 West Monroe street, Chicago, have made an important reduction in their price of Furnace Fittings. They are enabled to do this by the lower cost of material, thus giving their customers the benefit of the decline which has taken place since last season. They are now quoting 50 and 10 % discount on the old list, and in addition allow full freight to points east of Omaha and Kansas City on orders of \$10 or over, provided payment is made within 30 days by remittance in New York or Chicago exchange, accompanied by railroad expense bill. No charge for cartage or crating on such orders. Orders of less than \$10 subject to charge of 50¢ for cartage and crating; 2 % extra allowed on bills paid in 10 days. Equally important reductions have been made on their entire line.

The late G. T. Simonds of Fitchburg, Mass., gave the last years of his life to the development of ball bearings. An English company are bringing out his patents abroad. Among them is one to which Mr. Simonds attached much value, and that is the method for hardening the balls after they had been rolled. The object to be hardened is plunged first into brine and afterward into oil. This by itself is not new; but the novelty consists in the manner in which it is done. It is desirable that the object to be hardened should remain for a certain number of seconds in each of these fluids, and that it should pass from one to the other without coming in contact with the air. This is effected by making the bath double, the partition in the middle not extending quite to the bottom. It is then half filled with brine, on the top of which oil is poured on one side only. An endless chain fitted with wire buckets enters the brine at one side of the bath, and passing under the partition, comes out through the oil. The rate at which this chain is driven being decided and the depth of brine and oil regulated accordingly, it is evident that the objects in the wire buckets will remain immersed the exact time required.

THE WINDOW GLASS manufacturers from all over the United States met this week in Pittsburgh and formed a pool to be known as the National Association of Window Glass Manufacturers, whereby they will regulate prices and place the industry on a more profitable basis. The Indiana manufacturers after the general meeting met and advanced prices from 10 to 15 per cent. This action will, it is said, be made general shortly.

STOVE TRADE NOTES.

The Ohio Stove Trade.

Reports from stove manufacturers, in the main, are encouraging, but they are not uniform. A few producers are in the slough of despondency, judging from the tone of their communications, but these advices are from a small section, where the general improvement, so noticeable in other territory, has not been felt. Throughout Ohio and many parts of Indiana, however, come most encouraging reports, the first quarter of the year 1895 showing an increase of 50 per cent. in sales over the corresponding time a year ago, and even comparing favorably with the trade of two and three years ago. One manufacturer writes that business in stoves has been double that of a year ago, and, further, that his company are booking more orders for future delivery than ever before.

But while there is little room to doubt that the volume of business is increasing, it is equally true that profits are not increasing in the same proportion, but this cannot be expected by thoughtful business men.

Not a few stove founders have been farsighted enough to cover probable needs for pig iron by purchasing supplies for delivery during the next few months, thus protecting themselves against any advance in prices which the present buying movement of pig iron may create. Up to the present time, however, the pig market has been in favor of consumers, and the advance anticipated by furnaces has not been realized, but the indications at the moment are certainly for a hardening market.

Industries other than stove foundries dependent largely upon iron in this section are improving decidedly, and the activity previously noted in the money market continues. Loans of the Cincinnati banks have been expanded over \$1,500,000 during the first quarter of 1895, while deposits have increased only about \$500,000, and now country banks are drawing upon their balances quite heavily, and in addition are borrowing funds, indicating activity in the rural districts.

THE SYRACUSE STOVE WORKS, Syracuse, N. Y., have in the Kernan Welcome range a very attractive six-hole stove, which embodies the results of years of experience both as regards ornamentation and constructive features. The range has large fire box so arranged that the grate pulls out through the front opening without disturbing the water back or brick, capacious oven and Duplex Dockash or plain flat grates, as may be

desired. The sheet flue is of good size and the stove is guaranteed a quick baker and worker. The hot air for the upper rooms is drawn from the base and rear of the range without interfering with the water back or baking qualities. The Kernan Welcome is offered in two sizes, portable form and brick set.

Settlement of the Trouble at the Southern Stove Works.

The differences existing for some time past between the workmen and the management of the Southern Stove Works, at Evansville, Ind., have been adjusted and it is expected that matters will now run along to the satisfaction of all concerned. A brief account of the trouble and the settlement is contained in the issue for March 10 of the *Evansville Courier*, being an interview with August Brentano of the firm of Kiechle, Brentano & Oberdorfer, proprietors of the Southern Stove Works. In this interview Mr. Brentano says:

The firm closed their works in December, as they usually do for some time during that season. Early in January many of the employees went to Mr. Brentano and desired him to commence work again. He then called together 30 of his most skilled workmen and said: "Now, you can all go to work if you will not interfere with other men who make all kinds of stoves." They agreed not to and we commenced operation again. After we had been working for about two weeks we received an order for a Franklin stove from New Mexico. Several pieces were missing and the foreman gave orders to have them made. As soon as the workmen commenced work on them the 30 men stepped up to him and told him he must desist. There's where the difference originated. In the first place, there was no walk out; there was no lock out; there was no strike. All but 11 of the molders that were working for us were discharged by the foreman of the molding department, through the firm, for not obeying orders in regard to the discharge of some work they were told to do.

It appears that there is a certain make of stove called the Franklin that is termed a "strike" job when union men are forced to work on it. On Saturday, when the men were asked to commence work on that make of stove, there was wrangling at once. Some said they would quit that night—in fact, all but 25 said they positively refused to obey the orders of the foreman. On the following Monday all of the men reported at the molding room for duty. The question was again asked them if they would work on the stove and all but 11 refused. The foreman at once told those who would not follow instructions to take their tools and leave the premises at once, which they did.

My next action was then to advertise for non-union molders. They soon came from all over the country. The union men living here captured them, however, on their arrival, and after intimidating them paid their way out of

town again. I finally had quite a large number of molders together, however.

In the mean time the union men were continually harassing the 11 union men in our employ and their families also. They even went so far as to "do them up" and scared their families. The men were true to me as long as they could be, and then for fear of their welfare and their wives and children they went out also. I desire to say right here that those men are still in possession of their union cards and will go to work for me on Monday morning.

I finally had nothing but non union men. This continued so until Monday of this week.

On Monday G. F. Valentine of San Francisco, Cal., vice-president of the International Molders' Union of North America, came to me and introduced himself and related to me his official position, and asked for an interview. It was granted.

At the interview he asked me if the matter could not be arbitrated. I told him the firm were tired of the unfairness shown them by the local union; that this trouble had been continuous for the past seven years. We have adhered to the local union as close or closer than any manufacturer here, and we have had the most trouble and we are tired of it—thoroughly disgusted with being dictated to by our employees. However, I found Mr. Valentine a courteous gentleman, and it was not as difficult as I at first supposed it would be to adjust our differences.

The matter is now settled to the firm's satisfaction in every detail. You may say in your valuable paper that the firm are in far better condition in regard to our rights and privileges in our works than we were before the strike occurred. We now know what we are doing. Heretofore our employees run our business, and hereafter we will run it ourselves and to suit our own fancy and in accordance with the new management.

You might add that we will have nothing to do whatever with the local union. Our contract is made solely and directly with the International Molders' Union of North America.

You can say in your paper that the firm's boarding house at the manufactory was closed Friday night, and that the union men have paid all the non-union men's transportation out of the city or taken them into the union.

The union force will work for us, commencing Monday morning. I engaged 50 molders to-day, including the 11 who stood by me in time of need. There is no reason why these men should not continue their work, as Mr. Valentine admitted to me that the men, our employees, alone were in the wrong.

We have gained a decided victory, and our firm are thoroughly satisfied with the present arrangements.

STOVE MANUFACTURERS who have pattern making departments of their own will probably be interested in a new rotary wood trimmer which the Hess Trimmer Company, Twenty-fifth and Callowhill streets, Philadelphia, are

putting on the market. It is said to trim very wide work, accommodate material as thin as $\frac{1}{16}$ inch, and to possess numerous other advantages. The company have published a circular explaining the machine in detail.

S. M. Howes.

The New England stove trade recently lost a valued member in the death of S. M. Howes, which occurred Sunday, March 10, after a lingering illness, at Rockland, Mass. Mr. Howes was a native of Dennis, and while a young man went to Methuen, where he learned the tinsmith trade. In 1872 he established himself in the stove and tinware business in Rockland, where he continued for seven years. He then engaged in business in the city of Boston, and for a period of 15 years was at the head of the S. M. Howes Company, well known to the trade of the country, and especially throughout the New England States, as wholesale dealers in stoves and heating apparatus. A fully attended meeting of the Wholesale Stove Dealers' Association of Boston was held on the afternoon of Monday, March 11, at the office of the Walker & Pratt Mfg. Company, Boston, to take action upon the death of Mr. Howes. A Committee on Memorial Resolutions was appointed, as well as a committee to attend the funeral at Rockland on the afternoon of Tuesday, March 12. Mr. Howes was born 44 years ago. A widow and three children survive him. The funeral services were conducted by Rev. A. L. Wadsworth of the Baptist Church, music being rendered by a quartette. The remains were taken to Abington, where they were interred in the Mount Vernon Cemetery. Among those in attendance at the funeral were the directors of the Rockland National Bank, trustees of the Rockland Savings Bank and the committee from the Wholesale Stove Dealers' Association of Boston. Out of respect to the memory of Mr. Howes all the stove and hardware stores on Union street, Boston, were closed between two and three o'clock on the afternoon of the funeral.

The Manufacture of Furnaces in Syracuse.

We have received from E. C. Moses, assistant secretary of the J. F. Pease Furnace Company, Syracuse, N. Y., a letter in which he makes reference to the article printed in a recent issue of *The Metal Worker* respecting the manufacture and sale of furnaces in this State. Mr. Moses' letter, which explains itself, we present in full below:

Our attention has been called to the statement made on page 49 of *The Metal Worker* of March 9 in an article written by William H. Landers of this city, on "The Manufacture and Sale of Warm Air Furnaces in New York State." The statements refer to a comparison of the production of warm air furnaces in the several cities of the State of New York. Syracuse is set down as producing 2500 in an average year; Utica 8000, &c. As the estimate is preceded by the statement in which the writer says that it is made merely from observation, we do not suppose the comparison should be taken seriously by those who understand and know the relative production of the two cities. However, to correct an impression which may have been gained from the article and to set Mr. Landers right, we would state that

Syracuse produced in 1890, or in any subsequent year, far more than 2500 furnaces; in fact, the J. F. Pease Furnace Company alone have produced far more than that number. We think it would not be overestimating this city's production to state that fully 5000 furnaces are easily manufactured annually. There are, we believe, six or seven wide-awake manufacturers in Utica, and it is quite probable that they produce together from 5000 to 8000 furnaces. There are only three manufacturing concerns of this character in Syracuse. These three concerns are by no means insignificant in the production of furnaces. If the statement referred to heating apparatus in general we would, with the help of our house heating boiler manufacturers of this city, roll up some figures which would be interesting if not preponderating.

Cupola Tuyeres.*—VI.

BY DR. EDWARD KIRK.

Number of Tuyeres.

A cupola may be supplied with blast from one tuyere placed on one side of the cupola, but the objection to one tuyere arranged in this way is that the heat is driven by the blast against the opposite side of the cupola, and the destruction of lining at this point is very great. For this reason, at least two tuyeres are always placed in a cupola, and they are located on opposite sides so that the blast will meet in the center and be diffused through the stock. When a greater number of tuyeres than two are placed in a cupola they are located opposite each other and at equal distances apart to admit an equal amount of blast on all sides and prevent an uneven destruction of lining from the heat being forced unevenly against it by the blast. Any number of tuyeres desired may be placed in a cupola, and as high as 100 have been used in a 40-inch cupola and a greater number in larger cupolas. But these large numbers have given no better results in melting than two or four tuyeres in the same cupolas. It is not necessary to place a large number of small tuyeres in a cupola to distribute the blast evenly to the bed, and it is not advisable to put in small tuyeres, which are easily clogged by the fuel, cinder and iron, and are oftener rendered useless than large ones. Better results are obtained from large tuyeres and fewer of them.

The largest cupola in use may be supplied with blast by two tuyeres if they are big enough. The large cupola of the Buffalo School Furniture Company, Buffalo, N. Y., is supplied with blast by two tuyeres 12 x 18 inches, placed on opposite sides. This cupola, which is 60 inches in diameter inside, does excellent melting with only these two tuyeres, and the destruction of lining in melting is very light. I saw a large cupola with two tuyeres of about the above dimensions in use in a stove foundry in St. Louis, Mo., about 20 years ago, and it did excellent melting. The results obtained from these two cupolas would go to show that there is nothing gained in distributing the blast to the bed evenly by a large number of small tuyeres. When a number of tuyeres are placed in one row every other tuyere is sometimes placed about the width of the tuyeres higher than the tuyeres on either side of it. I have, however, never observed that anything was gained in melting by placing tuyeres in this way. When a

double row of tuyeres is used the upper row should be made very small in comparison with the lower row, for if they are made of the same size as the lower row, or even half the size, and the two rows are placed at any great distance apart the heat is so concentrated upon the lining between them that it may be burned out to the casing in one or two heats. Foundrymen using the double tuyeres, who find the destruction of lining very great, may prevent it to some extent by reducing the size of the upper tuyeres.

Shape of Tuyeres.

The shape of a tuyere has nothing to do with the melting, except as it may tend to prevent bridging or increase the depth of the melting zone by supplying blast to the fuel at different heights in a cupola. A small horizontal slot tuyere extending around a cupola, or the greater part of the way around it, tends to promote bridging, and it is generally conceded that a cupola with a tuyere of this kind cannot be run for a greater length of time than two hours without bridging and clogging up. Vertical slot and reducing tuyeres supply blast to the bed at different levels and increase the depth of the melting zone the same as the double tuyere. For this purpose the Truesdale, Lawrence or triangular tuyere, with elongated sides, are excellent tuyeres when made of a proper size and placed a proper distance apart. When it is not desired to admit the blast to the bed at different levels the flat or oval tuyeres are generally considered the best shapes, for they admit the blast freely, and a less amount of fuel is required for a bed with these shapes than with a round or square tuyere of the same area.

Tuyeres to Improve the Quality of Iron.

All kinds of fancy shaped tuyeres have been placed in cupolas to improve or change the quality of iron in melting; they have been placed to point up, point down, point across each other at certain angles and to point to the center of the cupola. There is nothing more absurd than to attempt to improve the quality of iron in a cupola by the shape or angle of the tuyeres. The instant the blast leaves the mouth of a tuyere it strikes the fuel in front of it. The shape or angle given to it by the tuyere is then instantly changed, and it passes through the crevices in the fuel until its oxygen enters into combination with the carbon of the fuel and produces combustion; it then escapes at the top of the melting zone, where it comes in contact with the iron as carbonic acid gas. This is the result, no matter what the shape or angle of the tuyeres, if a proper amount of blast is supplied. It may be claimed that the blast acts upon the iron as it drops through the fuel in the bed after being melted, but as before stated, the shape or angle given to the blast by the tuyeres is changed by the fuel, and the effect on the iron of the blast from one tuyere would be the same as from another.

Tuyere Boxes.

The tuyeres may be and are often formed in the lining of a cupola when laying the brick, but this is a very poor way of making tuyeres, for there is nothing to support the brick and maintain the shape of the tuyeres, and they are often broken or burned away until there is no regular shape to the aperture, and it is difficult to put the blast into the cupola at the point desired or to prevent iron or slag getting into the tuyere. Tuyeres are more generally

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formed with a cast iron lining or tyeure box, having the shape and size of tyeure desired. This box may be cast with a flange on one end and be bolted to the casing, or it may be cast without a flange and placed in the lining at the desired point as it is laid up. They are made in both ways, but it is better to cast it with a flange and bolt it to the casing, making an air tight joint, as it then insures the blast going directly into the cupola at the point desired. Tyeure boxes laid in a lining answer the purpose very well when the lining is new, but when it becomes old and shaky, or a section is removed and replaced, the lining often settles and the grouting or filling falls out, leaving crevices through which the blast escapes between the casing and lining, and from there enters the cupola at points where it does no good.

The cold blast supplied to a cupola keeps the tyeure box cool and it is not necessary to cast it hollow and fill it with water to prevent it being melted or injured by the heat. The only part of the box that is exposed and liable to be injured is the end next the fire, and to protect it the box at this point is generally cast about $\frac{1}{4}$ inch shorter than the thickness of the lining and the end covered with a little clay or daubing.

Selling Gas Stoves.

The season for the dealer to buy a line of gas stoves is here and there is little doubt but that the use of this kind of summer cooking apparatus is on the increase. This fact, however, is not enough to make handling a line of them profitable. They must be displayed both conspicuously and with good taste, and the report of an official of an English company is worthy of consideration on this point. The company had previously paid little attention to display, but finally tried the experiment of a fine showroom. A very handsome department for the sale of gas stoves had been fitted up. It had been a slightly costly enterprise, but they looked upon the outlay in the light of an advertisement to a large extent. Apart from that, although the department had only been opened a very few weeks the sales had amounted to several hundred dollars. It had been shown that a wonderful difference existed between having stoves on view in good airy, handsome premises, where the consumer could go and examine them, see them lighted, and, if satisfied, figuratively take them away (in other words, agreeing to purchase before leaving); and the other style of doing business by which the customer was obliged to go to a small space, where he was shown merely a picture or representation of a stove, and if he made up his mind to have one had to wait to be supplied. When, as in the case of a fine display, he saw a stove that suited him the business transaction followed, and was completed at once.

A LETTER from one of the spokesmen of F. M. Borden & Bro., Philadelphia, states: "Our vocal instructor has trained the boys to shout quality first and then talk price." They are now showing their samples of Challenge Iceberg refrigerators, Reliable gas ranges, Electric and All Right oil cooks, and the New Process, Splendid, Novelty and Globe, Jr., gasoline stoves. Their stove repair department is now located at 122 North Second street, under the management of C. S. Stevens.

ODD PLATES.

THE MISSISSIPPI VALLEY STOVE COMPANY of Fulton, Ill., have been reorganized. It is stated that local capitalists have purchased the interests of the Ohio stockholders. The new Board of Directors consists of J. W. Broadhead, E. Lockheart, Edmund Jackson, H. T. Heller, Jacob Martin and A. L. Van Osedale. The president is J. W. Broadhead; vice-president, H. T. Heller; secretary, A. L. Van Osedale; treasurer, Edmund Jackson. The manager is A. L. Van Osedale and the superintendent is Jacob Martin.

OTTO W. ROPIQUET, who was appointed the assignee of the Rogers Stove & Foundry Company of Belleville, Ill., has filed in the County Court his bond in the sum of \$8000.

WORK has been resumed at the Shakopee Stove Foundry, Minnesota.

THE NEW YORK STOVE WORKS, Peekskill, N. Y., are making a handsome addition to their line of 45 styles and sizes of gas hot plates and special appliances. The new candidate for kitchen favor is a gas range which they call the Surprise and a sample of which is on exhibition at John Savery's Son & Co., 97 Beekman street, New York. The range has three cooking holes on the top, one having a double ring burner, the inner ring giving a small flame for simmering or slow cooking, and when reinforced by the large flame of the outer ring a very powerful burner is available. The range is of the high cabinet type with an oven 12 x 12 x 10 inches high, with a boiler below the oven and the burner arranged to do double duty. All of the burners are provided with a regulator on the air mixer for adjusting the air supply to the gas pressure. In appearance the range is attractive, the design of the castings being neat and embellished by a fine nickel panel and an art tile on the oven door.

THE STOVE DEALERS of Pennsylvania, New Jersey and Delaware are to have a fine variety of gas and gasoline stoves from which to make a selection, says a local observer. J. Elwood Yeager, Philadelphia, who runs the New Era line of stoves, has the Clark's Jewel gas and gasoline stoves. Falth & Co. have the Reliable gasoline stoves and another line of gas stoves. The Philadelphia branch of the Mt. Penn Stove Works are showing the Dangler line of gas and gasoline stoves. J. Geo. Kurtz & Bro., Mahood & Co. and Hansell & Belson also have attractive gas and gasoline goods.

THE MAJESTIC MFG. COMPANY of St. Louis, Mo., last week awarded the contract for the erection of a new factory building which is estimated to cost \$75,000. The structure will occupy a lot fronting 108 feet on the south side of Morgan street between Twentieth and Twenty-first streets. This addition to the company's plant has been made necessary by the increase in the demand for steel ranges.

THE VICTOR STOVE COMPANY, with works located at Salem, Ohio, resumed operations on Thursday, March 14.

THE AMERICAN GAS STOVE COMPANY of 615 Ogden avenue, Chicago, Ill., have issued a catalogue and price-list of the gas cooking and heating appliances which they manufacture. The goods are made under the name "American" and are offered in a variety of styles and sizes. In the ranges the bodies, ovens and broilers are constructed of heavy

cold rolled refined steel, the oven having a double bottom consisting of an extra heavy steel plate. The oven has the makers' patent automatically balanced drop door with cold handle. The broiler contains broiler pan and wire broiler grate, and there is a galvanized drip pan under the top burners. There are pilot cocks at the oven and water heater burners. The statement is made that three single and one double top cooking burners are used on all four-hole ranges, the single burner consuming 10 and the double burners 20 feet of gas per hour. The catalogue shows the American Junior, New Enterprise and Columbia hot plates or table stoves, the American china kiln and a variety of styles of gas heaters.

GAS STOVES, both for heating and for cooking, appear to be becoming more and more popular, says a London paper. According to the experience of the Gas Light & Coke Company the demand for them is increasing by leaps and bounds. In 1889 the rentals yielded a revenue of £5860; last year the income from this source had risen to no less than £18,872. Nor is this London's testimony only. From Norwich and Ipswich come reports that the adoption of these modern substitutes for kitcheners and grates has already materially affected the carriage of coal in that part of the country.

THE MARION STOVE COMPANY, Marion, Ohio, have brought out a new heater for 1895 named the Retort Oak. It is built upon the same principle as the company's well-known Retort stove, which has proved by years of success that it is possible to burn soft coal and at the same time secure a steady fire, freedom from smoke or soot and safety from gas. This is done by fitting the stove with a magazine of peculiar construction so that the fire is properly fed. The Retort Oak is of handsome appearance, having an ornamental nickel foot rail completely encircling the stove, an ornamental base, full mica illumination around the fire chamber, an artistic name plate over the central door and a well finished awing top with a graceful urn. This stove is made in two sizes, 16 and 18 inch.

AN ACTION to foreclose the trust deed on the Superior Stove Company's property, at Superior, Wis., has been filed by the Keystone National Bank, trustee. This is expected to lead to a speedy reorganization, after which the plant may be started again.

WE ARE INDEBTED to the Eclipse Stove Company, formerly the Van Wie Gas Stove Company of Rockford, Ill., for a copy of a 40-page catalogue of gas stoves which they manufacture. In the announcement to the trade attention is called to the fact that the new concern own and control all rights, titles, patterns, patents, &c., of the Van Wie Gas Stove Company, and that the manufacture of all old style stoves will be discontinued. Nothing but the latest improved goods will be turned out, special attention being given to increasing the capacity of the stove and making it possible to change a three to a four and a four to a five burner; adding a water heater, high broiler, warming oven, &c., and replacing old linings without dismantling the stove. The Eclipse Gas Stove Co. state that they will also manufacture a line of cheap one, two and three burner boiling stoves and a hotel and restaurant cake baker. The goods illustrated are for the most part cabinet ranges, the engravings being accompanied by brief descriptive par-

ticulars, dimensions of the various parts, &c. In connection with the description of their water heater a sectional view is given showing the internal construction. A list of repair parts, reference to the Eclipse ventilated oven, sad iron heaters, soldering furnaces, &c., constitute other features of interest.

THE ANNUAL STATEMENT of the Michigan Stove Company's Employees' Mutual Benefit Association, covering the period from February 20, 1894, to February 19, 1895, shows receipts of \$3693.49, and disbursements of \$1529.16, leaving a cash balance of \$2164.33. The total benefits disbursed during the period named amounted to \$1424.16, and the total amount paid in benefits since the organization of the association, May 12, 1882, aggregates \$18,336.01. From this it will be seen that the association is more than self-sustaining, and the benefits paid have in many cases helped to tide over what would otherwise have proven very serious situations.

THE WORKERS IN STOVE LINES in Albany, N. Y., are rejoicing in the prospect of a more prosperous season than the city has seen for several years. During the recent depression in the iron market local manufacturers purchased a great deal of material at reduced rates, so that they are admirably situated at this time to take advantage of the constantly improving pulse of the stove trade in general. As far as Albany is concerned, the demand for heating goods has seldom been greater at this time of the year, especially in contrast with the sales of the past several years. In consequence of a hopeful view of affairs caused by the improvement of the local and general market, Rathbone, Sard & Co. have satisfactorily settled all minor differences with their employees and will set their big stove foundry in operation again on Monday next, March 25. They will at the start employ 150 men and increase that number as business warrants. A large number of Albany iron workers have been out of employment for many months, but the men are congratulating themselves that from present indications there will be work for all before the season is very far advanced.

THE FOUNDRY of the Bussey & McLeod Stove Company, Troy, N. Y., started up again Thursday, March 14, the shut down having been of several weeks' duration. A limited number of men is employed at present, but it will probably soon be increased. The foundry was all ready to resume operations on the Tuesday morning previous, but a cylinder broke on the engine and repairs necessitated a delay until Thursday, when they were completed.

AN ENGLISH WOMAN, writing from Singapore, says: "All the cooking is done in a kitchen at the back of the house. Our cook uses coke as fuel; but wood or charcoal is the general fuel in Singapore. The appliances are very simple, but the Chinese cook can serve up a dinner equal to any to be found in the best houses in England. Cooking by gas, excepting at one of the hotels, is quite unknown in Singapore, as the Chinaman is very conservative, and will only work in the way he has been accustomed to. I have my own pet gas stove, so as to occasionally amuse myself by preparing a special dish or two; but the Chinese cook is very jealous of my work, and is always rather sulky when he sees 'Mem' cooking anything. When I say that there is not a chimney on a dwelling house in Singapore, and not a fire place in any of

the rooms, it will give people at home a little idea of the unhomelike look of the town."

THE TROY OIL STOVE COMPANY, Troy, N. Y., manufactures of the Beauty oil stoves, have appointed Reeves & Smiley, Philadelphia, Pa., and C. T. Corly, Brooklyn, N. Y., agents for the sale of their goods.

THE COLLINS & BURGIE COMPANY have removed their shipping department from Chicago to Marengo, Ill. Manager Albert Moffat has transferred his headquarters to the works at Marengo, but a salesroom and sample room will still be maintained at 225 West Twelfth street, Chicago, under charge of James A. Lounsbury, secretary of the company. All shipments of either large or small lots will hereafter be made from Marengo.

THE DETROIT STOVE WORKS of Detroit, Mich., favor us with a copy of their 1895 catalogue, which they have recently issued, illustrating and describing the Detroit Jewel gas stoves. The publication is attractively printed in a blue black ink and bound in paper covers, with embossed side title in old gold and deep blue. The Detroit Jewel ranges are of rich ornamentation, substantial construction and embody the latest features of convenience and utility. They are offered in various sizes, and in connection with each illustration are given prices, code words and weights. The body of the Detroit Jewel range is of cold rolled steel, lined throughout with asbestos. The top plate is extra large and the grates are of proper height for good combustion and made to allow for expansion when heated, so they will not crack. The oven doors are balanced, the spring being covered and so arranged that when the door drops the latter is flush with the oven bottom. The face of the door is smooth steel, forming a strong and convenient shelf when opened. Some of the opening pages are devoted to Detroit Jewel burners, while others are devoted to illustrations of Detroit Jewel hot plates.

A Problem in Hydrostatics.

At a recent meeting of the Engineers' Club of Philadelphia, C. H. Ott described an ingenious solution of a problem in hydrostatics which had come under his notice at the town of Anniston, Ala., in 1882. Works there established for the purpose of water supply and fire protection for the industrial establishments consisted of a well 10 feet in diameter, driven to a water bearing stratum 80 feet below the surface of the ground, and containing a double acting single cylinder pump located about 15 feet above the bottom of the well and worked from the pump house above.

As the water required at the time these works were established was not very heavy, the supply from the well in six hours of pumping was sufficient for 12 hours of service, and the engine and pump had sufficient capacity to empty the well within 8 or 10 feet of the bottom in about 12 hours of continuous working. When it became necessary to repair or examine the pump cylinder the water was lowered by pumpage to the greatest possible extent, and then, by means of a steam jet, the well was kept drained.

As the town grew, the supply from the well became inadequate, and a new well was started about 40 feet east of the pumping well. A shaft 6 x 12 feet was driven to a depth of 120 feet, where a

flow of water was had. In order to provide storage for water, and to connect the new shaft with the pumping well, a timbered drift, 4 x 6 feet, was run to directly beneath and about 40 feet below the bottom of the pumping well. The water supply not yet being deemed sufficient, an 8-inch well, cased with pipe, was bored in the new shaft to a depth of 230 feet below the pump house floor, and a great flow of water was struck. The drill in passing through the disintegrated limestone bored a much larger hole than 8 inches in diameter, so that large quantities of water passed up outside of the casing. When the depth of 230 feet was reached the latter quantity was so great that the water level in the new shaft could not be lowered and maintained with the apparatus at hand to more than about 20 feet below the pump house floor. An 8 inch hole was then drilled from the bottom of the pumping well to the drift below. It was still found impossible with all of the pumps and jet apparatus available to lower the water level in the pumping well to more than about 25 feet below the pump house floor, thus furnishing an ample water supply.

Some months after these arrangements had been finished a failure occurred in the pump cylinder under 50 feet of water, and with no apparatus available to lower the water in the well sufficiently to make the necessary repairs. After several expedients had been tried the following contrivance was devised:

A balloon shaped bag, in dimensions about 3 feet in diameter and 6 feet long, was made of six plys of bed ticking, roughly quilted into squares. The bag was soaked in linseed oil, and a quantity of rye flour inserted and well shaken around. A 1-inch pipe terminating in a sleeve was inserted in the mouth of the bag, which was then securely wired around the pipe. Sewn to the bottom of the bag was a stout ring and to this was wired a half pig of iron by a ring bolt inserted into its end. The bag was then wrapped tightly with twine into a cylindrical shape and was lowered into the drill hole in the pumping well by means of sections of pipe until the weight struck bottom; by estimation one-half of the bag entering the drift below, the remainder being in the drill hole. The 1 inch pipe was then attached to the service main through a stop cock and a pressure gauge attached thereto, and the bag was slowly distended until a pressure of 50 pounds per square inch was reached and maintained. The upper part of the bag swelled out and accommodated itself to the irregularities of the drill hole, the lower part of the bag swelled out into a bulb shape, the whole resembling an inverted champagne bottle cork. The drainage pump and steam jet were then set to work and speedily emptied the pumping well, the bag being held in shape during the lowering of the water by an interior water pressure of about 10 pounds per square inch in excess of the exterior water pressure. The repairs to the pump having been readily made the water was exhausted from the bag and the apparatus withdrawn.

As the materials not already on hand could only have been obtained by express in about 48 hours, and as the contrivance described was easily made and did the work so quickly that the pumping engine was stopped only about ten hours, Mr. Ott considered that the treatment of this problem was a most ingenious and clever solution of what threatened to be a most serious condition of affairs for that neighborhood.

TRADE REPORT.

The Iron Market.

The advance in wages voluntarily granted to the men in the Connells-ville Coke region has been a startling surprise, and has appeared to many a revelation concerning the movements of a leading Pittsburgh interest. The other operators have fallen into line promptly. A good deal of guessing is being done as to the position in which some of the Coke operators, furnace companies and Steel producers find themselves. Have Coke producers sold largely at 90¢ up to July? Have furnace interests contracted to sell Bessemer Pig for the second quarter at the low prices recently ruling without covering their Coke requirements? These are the questions which are being eagerly asked.

It is pretty well known that nearly everybody has stocked up with Coke lately as fast as possible. It is a matter of fact that stocks of Pig Iron have increased during the past few months. These points are in favor of the surprised buyer.

The one argument on the other side is that prospective cost has gone up. In other words, more money must be asked for crude and finished products as soon as the supplies of cheap Coke are exhausted. Whether the advance will be 25¢ or 35¢ per ton is still a question.

It may as well be acknowledged that many in the trade regard the movement with suspicion. They urge that the market is being taken hold of by the wrong end, and that only an increased demand and not a forced rise in the cost can bring about a lasting improvement.

Against that it may be urged that after all it is largely a matter of sentiment; that the industry must be jerked out of the old rut; that if that is once done, no matter how, the right start has been made, with which many will give their powerful aid.

Pig Iron.—The New York market is quiet and displays a weakening tendency so far as prices are concerned. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$11 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

In the Philadelphia market sellers are talking a little more money; some who sold at \$11 for No. 2 Foundry X claim to be holding firm for \$11.25, and those who sold at \$11.25 similarly ask \$11.50. No objection will be made to these prices, providing that the movement is uniform all along the line. Consumers would be glad to see an advance, the great point being not to pay more than others are paying. It is thought not unlikely that prices will stiffen up, and it is doubtful if the inside figures of last week would be accepted as readily as they were at that time. Producers feel more encouraged than they have done

for some time past. Quotations are usually given about as follows, but it is not improbable that the inside figures will be more of an exception than they have been heretofore:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 1 Plain.....	10.75 to 11.00
No. 2 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

Another week of increasing business in local Coke Iron marks the advance toward better times in the Chicago market. A decided improvement in inquiry has taken place, and consumers are buying small lots very freely, with some disposition to increase their shipments. Some expectation exists of an advance in local iron in consequence of higher prices on Connells-ville Coke, although it remains to be seen whether West Virginia Coke will also be advanced. Unless this is done it is likely that the proportion of West Virginia Coke used here will grow considerably. Southern Iron was comparatively quiet during the week. The outlook for next week's business is much better, as quite a number of good inquiries have recently developed. An item of interest to foundrymen in adjacent towns is the notice which has been given of an advance on freights to those points of 20¢ per ton from Southern localities. Prices have recently relaxed to some extent, and our quotations are revised accordingly. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$12.25 to \$13.00
Local Coke Foundry, No. 1.....	12.25 to 10.50
Local Coke Foundry, No. 2.....	9.75 to 10.00
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch No. 1.....	10.25 to 10.50
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Local Coke Foundry, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.25
Southern, No. 1 Soft.....	9.50 to 9.75
Southern, No. 1 Soft.....	10.00 to 10.25
Southern, No. 2 Soft.....	9.75 to 10.00

Careful inquiry shows that most furnaces in the Pittsburgh district whose Coke contracts expire on March 31 have very little iron sold ahead at low prices. Those who sold ahead based on 90 cent Coke will probably prefer to close down in preference to paying higher prices for Coke and making the iron at a loss. As to Pittsburgh prices, little can be said. Furnaces whose Coke contracts expire with this month are refusing to quote. Those who have cheap Coke up to July 1, are holding off to see whether higher prices will not come. In the absence of any recent sales we quote nominally as follows:

No. 1 Foundry.....	\$10.50 to \$10.65, cash
No. 2 Foundry.....	9.65 to 9.70 "

The buying movement in the Pig Iron market at Cincinnati continues quite active, but while there is an evident disposition among consumers to provide for their wants, in part at least, for the next four or five months, they are unwilling to meet any demand for higher prices and thus far the increased volume of business has not resulted in any appreciation of values. The largest buying during the past few days has been by rolling mills in the northern part of the State. There have also been several contracts of moment placed by local foundries. The sales to foundries were mainly of No. 2 Foundry. One en-

couraging feature is the number of small sales making from single cars up to 500 ton lots and the diversity of interests covered by the buying movement. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.90 to 16.40
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50
Bessemer.....	11.65 to 12.00

Metal Market.

Pig Tin.—There has been a sharp rise in prices on both prompt and future deliveries and more or less excitement in the wholesale market at times, yet a smaller volume of business than might have been expected under the circumstances. On prompt and current month delivery the advance was about 0.70¢. May delivery moved up 0.60¢ and later futures 0.40¢ @ 0.50¢. Speculative dealings, however, did not involve much, if any, over 500 tons, despite this movement in values and remarkably heavy trading in London. Out of town jobbing purchases were merely routine in character and nothing more than the average business was done with consumers. Not a few of the latter have a good stock from deliveries made on prior purchases and requirements generally seem to have been so well covered that the speculative flurry stimulated purchases in a very moderate degree only. The rise in prices was due chiefly to comparatively light shipments from the Straits and the advance in silver. The shipments during the first half of March were 1460 tons, of which 230 tons to the United States, 900 tons to London and 230 tons to the Continent, against 1775 tons in the corresponding period last year. Quotations on small lots of Straits from store are virtually unchanged at 14½¢ @ 15¢ per lb.

Copper.—Continued pressure to sell has caused a further decline in prices and the market remains unsettled and depressed. Home consumers have taken a very fair amount of Copper through closing contracts previously pending and new purchases at the lower range of prices. Electrolytic sorts fared relatively the best. Some export purchases have been made and more or less stock has gone abroad on consignment. The entire movement, however, has little effect against the depressing influence of large supplies at the mines and continued heavy production. Exports from this port the past week include 253 tons Plates, 60 tons Ingots, 130 tons Pigs, 40 tons Bars and 290 tons Matte. In small retail business inquiry has been only moderate and prices unchanged on a basis of 10½¢ for Lake Ingot in small parcels.

Sheet Copper.—While the demand for cornice Copper is fully equal to if it does not exceed that of last year at the same time, it still lags behind the average of a good season. Inquiry is, however, rather more active and the

large amount of building in prospect in this section gives promise of much better trade later in the year. Small lots of sheet Copper from store are quoted at the net list price of 14¢ @ lb.

Pig Lead.—A decided change has taken place in the market and there are indications that the long drawn out contest between prominent consumers and producers has ended, temporarily at least. In any event it is the fact that fully 2500 tons have been taken by home consumers and that nearly or quite 1500 tons were purchased for export. Export purchases were stimulated by a rise in London prices, due to comparatively light stocks of Spanish and English Lead there, and home trade buying was helped along by that circumstance and knowledge as to the favorable statistical position on this side of the Atlantic consequent upon restricted production here during the winter months. Jobbers report a rather light demand for both Pig and manufactured Lead, with no changes in the prices for small parcels quoted last week—namely, 3½¢ for American Pig, 5½¢ for Pipe, and 6½¢ for Sheet; the two last quoted being subject to a discount of 20 %.

Spelter.—Nothing more than routine business has been effected in this market, and there is little if any change as regards demand. In short, the market here is still a very narrow one in all particulars. Enough orders go out from other quarters to keep the primary market in very fair shape, however. Prices for small lots of good Western brands from store are quoted at 3½¢ @ 4¢ @ lb.

Antimony.—Jobbing business is fair, but otherwise there is little doing. Prices for small parcels are quoted at 9½¢ @ 9½¢ for Cookson's and 8¢ for Hallett's.

Nickel.—Seller's quotations remain at 35¢ @ 40¢, as to size of lot.

Tin Plate.—Having passed the proverbially fatal "idea of March," the long and continuous period of dullness in the Tin Plate trade seems to have been broken. A better tone has developed in the market, and some quite liberal purchases have been made of ordinary Coke Plates for delivery during the spring months. There has also been more general buying of spot stock, low prices having at length served to stimulate purchases. Assistance to sellers has come also from the curtailment of production abroad, and the consequent depletion of stocks, leading to a general hardening of prices to a greater or lesser extent all along the line—that is to say, concessions on quoted rates are less readily given. No quotable change in prices has taken place, however. The weather has been against building operations, and the call for Roofing Plates has been very moderate accordingly. Small business is still behind the average, and the size of individual orders does not yet increase much beyond the limit of present requirements.

A special London cable dispatch of March 20 to *The Iron Age* reports as follows in regard to the British Tin Plate market: In the Tin Plate market there has been a change for the better. Inquiries have improved decidedly and buyers are offering 3 half-pence over last week's bids. Sellers' figures are up 3 pence from the lowest point touched. Large lines for Russia have been placed and there is improved demand from the Continent. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 1C 14 x 20	9 11/16	@	9 3
Siemens Cokes, 1C 14 x 20	9 4 1/2	@	9 6
Ternes, 20 x 28	17 6	@	22 6
Charcoal, 1C 14 x 20	10	@	13

Sheet Iron—Both Black and Galvanized Sheets are in exceedingly good demand. Mills are well supplied with orders, and manufacturers are showing some disinclination to contract for future deliveries, particularly in view of the possibility of an advance in Billets. Values are, however, as low as ever, notwithstanding that the leading mills are refusing to book at the lowest prices prevailing. Small lots of No. 27 Common Iron are quoted at 2.60¢ @ 2.65¢ from stock and of Galvanized at 75 and 10 ¢ off.

Chicago Report.

Scrap.—Business continues fair, with a marked scarcity in Cast Scrap. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap	\$6.50	...
Machinery Cast	5.50	...
Malleable Cast	5.00	...
Sheet Plate (free of burn)	4.00	...
Burnt Iron and Grate Bars	3.00	...
Sheet Iron and Hoops	2.00	...
Plow Steel and Breaking	4.00	...
Stock	3.00	...
No. 2, such as Shovels, Hoes, &c.	3.00	...
Old Boilers—whole (Iron)	3.00	...
Iron—cut in single	5.00	...
Sheds and Rings	5.00	...
Old Gas-Pipe and Boiler	5.00	...
Tubes	3.00	...
Cast Borings	4.00	...
Turnings	7.50	...
Horsehoes	6	...
Copper Bottoms	7 1/2	...
Copper Clips and Heavy	6 1/2	...
Heavy Brass	3	...
Light Brass	2 1/2	...
Pipe Lead	2 1/2	...
Tea Lead	2 1/2	...
Zinc	4	...
Rubber	4	...

Anthracite.—Trade is quiet. Winter is about over, and little will now be done for several months. Dealers here have large stocks with which to enter upon another season. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.	\$4.75	\$5.00
Milwaukee, Wis.	4.75	5.00
Kansas City, Mo.	7.95	8.20
Council Bluffs, Iowa	7.95	8.20
Lincoln, Neb.	8.10	8.35
Sioux City, Iowa	7.95	8.20
Aberdeen, S. Dak.	8.00	8.25
Dubuque, Iowa	6.05	6.30
Madison, Wis.	6.25	6.50
St. Paul, Minn.	7.25	7.50
Burlington, Iowa	6.25	6.50
Des Moines, Iowa	7.75	7.95
Davenport, Iowa	6.05	6.30
St. Joseph, Mo.	7.95	8.20
Leavenworth, Kan.	7.95	8.20
Omaha, Neb.	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver	\$8.00
Pueblo	8.00
Colorado Springs	8.00
Leadville	8.00
Cheyenne, Wyo.	10.00
All points between Denver and Missouri River	8.85

A MEETING of the Canadian tinware manufacturers was held last week in Montreal, and was attended by representatives of all the leading firms. Some changes were made in the list prices of goods and a number of important lines of goods were withdrawn from the association's list and will henceforth be sold at open prices.

CONDITION OF THE

Hardware Trade.

TRADE runs along without any important modification in volume, the demand being somewhat uneven, and, to a certain extent, spasmodic. Seasonable goods are moving with a fair degree of freedom and constitute a considerable portion of the current business. It is evident that trade in general is, on the whole, better in the West than in the East, and the reports which come from many Western points are gratifying. It is the view of many well-informed persons that as soon as moderate weather prevails in the East there will be a marked quickening in the demand, and that business will assume something like its normal volume. Advances from architects and others in close touch with builders indicate that there will be an increased amount of building this year, and some are taking sanguine views of the prospect. The outlook for the market in general would be much more satisfactory if there were evidences of a decided improvement in its tone so far as prices are concerned, but these unfortunately continue without showing many signs of firmness. Some of the staples are not apparently quite as strong as a short time ago, and on many classes of Shelf Hardware and miscellaneous goods prices are somewhat ragged, furnishing sufficient reason for the manufacturers' complaint of their unprofitableness. Manufacturers are, however, learning to be more conservative than formerly, and some of them are holding aloof from the market for a while rather than force the sale of their goods by further concessions. Stocks certainly are low both in the hands of producers and the trade, and a sudden demand would in many lines cause something of a scarcity.

Advices from Chicago.—The past week showed a rapid growth in the volume of business. A leading house here is reported to have received on Monday the largest mail in any one day for three years. Orders are not only more numerous, but they are steadily growing larger. One of the strongest features of the trade to which allusion has previously been made is the continuous demand for new stocks of goods. Scarcely a day passes that a new stock is not purchased in this jobbing center. Orders of this character swell the volume of business very decidedly. The general demand for goods is still of a hand-to-mouth character, orders being sent in only when the goods are needed. This is shown by the urgent demand for prompt shipment. Tinware has been moving much more freely. The only material change in prices recently made is an advance of 5 per cent. on the new list of Carriage and Machine Bolts. Excepting the cut in Wire Nails, nothing has happened so far this year to seriously disturb the even course of the jobbing trade in this locality. No serious cut has been made in any other class of goods by jobbers in order to induce trade, as has been the case in previous seasons. The Nail situation now promises to adjust itself, and in a short time this irregularity will probably be eliminated. Heavy Hardware is picking up, particularly with agricultural implement makers.

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The End of a Strike.

The building trades strike in New York City has ended under an agreement which is virtually a defeat for the workmen. The union electrical workers, who claimed an eight-hour working day, have had this conceded to them from May 1, instead of May 15, a matter which might probably have been arranged at first by reasonable methods. This is the full extent of their gain. Beyond this, the union has been obliged to agree that its members who went back to work before the strike was off shall suffer no penalty, and that the non-union men who took the places of the strikers shall not lose them. Thousands of other workmen in other branches of the building trades who, generally against their own inclinations but in obedience to the orders of their autocratic rulers, the Board of Walking Delegates, struck in sympathy, get nothing at all. In other words, numbers of the strikers have not only lost a month's wages, but find themselves left without employment. Thus once more has a strike entered into without sufficient justification signally failed of its purpose. What have been the consequences? Serious pecuniary loss has been suffered by both parties to the dispute; great inconvenience has been imposed upon a large portion of the community by the stoppage of building operations for a month; ill-will has been engendered between employers and employed; and, at the end, a number of intelligent and industrious workers have lost their positions and find themselves and their families reduced to destitution. All this is not offset by any corresponding good, either monetary or moral.

Why It Failed.

This is merely a repetition of the lesson which has been read over and over

again within the last few years—a lesson, however, which seems hard of apprehension by labor organizations. The lesson is that a strike to be successful must be scrupulously justifiable. This one failed because it was wrong. The electrical workers had agreed to a ninety days' notice of any demand for a change in the terms of their labor, and they overrode this contract. As to the other workmen, even granting that the electrical workers had a grievance, they had none, and their so-called sympathetic strike was as entirely unwarranted an action as was the Debs railroad strike to coerce the Pullman Company last year. Strikes of all kinds are becoming so frequent, and are undertaken nowadays on such flimsy pretexts, that the public has but little sympathy left to bestow on the strikers, even at the best of times, and none at all in the case of unjustifiable strikes, such as was this one. Public sympathy, in the case of sympathetic strikes, is exclusively with those who are dependent on the misguided men and who suffer from their actions; not at all with the men themselves. This is particularly the case when workmen permit themselves to be led into wrong and foolish actions by submitting their independence to a board of walking delegates, a class which thrives on labor disturbances such as these. One gratifying feature of the late building trades strike should, however, be recorded. It was unaccompanied by a single act of lawlessness or riot. In this respect it will compare favorably with many recent troubles of the kind.

Some Signs of Improvement.

To the country at large it must be an unspesakable relief to note the signs of improvement which are multiplying on the business horizon. The developments of the past two weeks have been almost uniformly in the direction of encouragement. They point to a revival of confidence, that all-important factor without which no return of prosperity can be secured. Trade and industrial reports are more favorable. Railway traffic returns, which made so poor a showing in the blizzard month of February, exhibit so far for the current month a distinct improvement. The bank clearings last week showed a material increase as compared with last year's figures, indicating a growth in the volume of general business. Wall Street has taken the lead in the upward movement, stocks and bonds having experienced accession of strength and activity. Prices of securities are advancing steadily and uniformly. The investing public is again largely in evidence as buyers on "the street,"

having apparently reached the conclusion that affairs, both financial and commercial, have, since the departure of Congress, entered upon a safer stage and one from which the disturbing influences which have affected the markets for the past two years have been removed. The money market is hardening, and foreign exchanges are easier than for some time past. Silver is rising in value, and the markets for grain and cotton have advanced in a manner which would have been thought most improbable a short time ago. Recent heavy foreign buying of our railway securities indicates the beginning of a movement to repurchase at least a portion of the immense volume of stocks and bonds sent back to this country from Europe since the Baring panic. A large increase in the importations of merchandise reflects the belief on the part of merchants that there will be a brisk spring trade. In short, all signs point to the beginning of a recovery which, if, somewhat gradual, promises to be continuous. It is true that the gain in general business is slow as yet and its volume materially below that of a year of average prosperity; but it is growing, and gives promise of considerable expansion in the coming months.

Church Heating Plants.

It is probable that the weather of the past winter made more extensive repairs necessary in church heating systems than in any others, and whether the systems were steam, hot water or combination, the effect was the same. The most severe effect of the weather coming at the middle of the week, many church heating plants were without fire, no fire having been necessary during the previous portion of the season to prevent their freezing. On firing up late in the week for the next Sunday the damage sustained was discovered in many cases too late to be repaired in time for use on the following Sunday. In some hot water jobs every radiator in connection with the plant was frozen and burst, and in some cases every section of the radiator. The damage was not confined to the radiators alone, but both the flow and return pipes and the fittings succumbed to the frost. In steam plants where the condensation did not return to the boiler owing to poor piping or want of air valves, the plants were rendered unfit for service by ice bursting pipes and radiators. In churches where combination apparatus was used some difficulty was encountered in explaining that the water heating apparatus would be ruined if the furnace was run, though in some cases the risk of its destruction was taken in order to have service. It requires more judgment than is possessed by the average sexton to say when the fire shall be run to prevent freezing, and the extra labor of emptying and filling the system as a precaution is seldom undertaken.

THE LETTER BOX.

Are Gravel Roofs Durable?

From G. F. WHELOCK, Birmingham, Ala.—The correspondence started by "G. D. B." in *The Metal Worker* February 16 in reference to tin and gravel roofing has opened up a very interesting question, and to me personally it resulted in a very pleasant correspondence with "G. D. B." of Greenville, S. C. I have had a couple of communications from him, and from his statements of conditions and results I give him credit for being perfectly honest in his assertion that he can put on a good tin roof for \$4 per square and make money. But while those conditions exist there I have never met them in any other part of the country during my travels, which cover the Eastern and Western States and this portion of the South. In regard to the relative cost of tin and gravel roofing, I would base the price of a good tin roof laid on sheathing paper and finished with two coats of good paint at \$7.50 per square, with a resultant profit to the roofer of \$1 per square. Admitting that this roof with slight repairs and a coat of paint every two years at a cost of 75 cents per square will last 20 years, we have a total cost during its life of \$15 per square. Now, we must bear in mind that to attain this result the roof must be looked after every couple of years. If this is neglected and the roof is allowed to rust, it will, of course, proportionally shorten its life.

Now, as to the gravel roof, I will base my price at \$4 per square for a four-ply coal tar pitch composition roof; this will give the roofer \$1 per square profit. This roof will last at least for ten years, when it can be replaced at the same original cost, making the total cost for 20 years \$8 per square and requiring no attention during the life of the roof. To attain this result the material and work must be of the best; and in this connection I wish to say that there has been a great improvement in the manner of doing gravel roofing in the past few years, especially the substitution of metal for the old style felt flashings and metal eavestrips for the wood strip. Right here, in my mind, is the vital point, in connection with composition roofing. Any portion of the roof where it is not possible to protect the felt, on account of the position or shape, with gravel should be covered with metal, for as long as the felt is perfectly protected the roof will last.

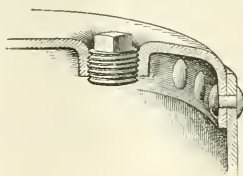
In the laying of a good composition roof a good grade of tarred felt, weighing not less than 2½ ounces to the foot, should be used. Care should be taken that there is not less than four thicknesses at any part of the roof, well stuck together with hot pitch. In finishing the top surface with gravel, which should be not larger than ½ inch and free from sand, the pitch should be poured and not applied with a mop. To put on a roof in this manner will require about 100 pounds of pitch to the square. While I base the probable life of this roof at ten years, if asphalt properly prepared is substituted for pitch and the felts are saturated with asphalt instead of coal tar, I will place

the life of the roof at 25 years, and I believe this a safe limit.

I apply a roof of this kind here, for which I charge \$7.50 per square, same as first cost of a good tin roof, painted, and as between the two there is no comparison. To show the value placed upon this roof by one of my customers, who has used the same roof on his buildings in St. Paul, Minn., he says he would rather have it at same cost than sheet gold. While I hardly agree with him on this point, I do believe that asphalt, when properly prepared and applied, is the best roofing material for flat roofs in the market, copper not excepted. Coal tar pitch in time by exposure loses its oils, becomes brittle, the gravel is loosened, the felt is exposed and rots. Asphalt is not affected by exposure to the atmosphere, does not become brittle, and consequently holds the gravel securely in place. I notice that some roofers are in the habit of using pine tar pitch. This becomes very soft in summer and very brittle in cold weather, and I do not believe it possible to do good work with it.

Mending a Boiler.

From H. J., Camden, N. J.—About four o'clock in the morning of the day before Christmas I was called to the



Mending a Boiler.

house of one of my clients whose kitchen was nicely flooded with water. I immediately turned off the water in the cellar and found a hole in the top of the boiler from which water had been spurting until it had washed the paper off the ceiling for a space 3 feet square. The head of the boiler was of wrought iron, stamped up into a dome shape. I reached out the hole almost large enough to receive a ¼ inch tap. Then with a tapering punch or drift pin, which I drove into the hole, I enlarged it sufficiently to receive the tap, at the same time forcing in the metal and increasing the surface which would bear on the tap in cutting the thread. After threading the hole I inserted a plug and stopped the trouble. The sketch I send shows the way it was done. I found two other small rusted spots on the top of the boiler which I have told the owner will eventually become leaks. This is not my first experience with holes of this character in a galvanized iron boiler. I have put eight plugs in a boiler in the house of one of my customers, and have found that a galvanized iron boiler will frequently show a tendency to rust out in spots in from

four to six years. Sometimes they last longer—to 12 or 16 years—but in my experience I would consider a galvanized boiler that had been in use 20 or 25 years without developing any of these rust spots, which eventually become holes, as one of extraordinary durability. I thought that this experience and method of mending a boiler might be of interest to some of your readers and have sent it in.

Lining Tanks With Lead.

From S. K., Grand Rapids, Wis.—I would like to get from *The Metal Worker* or some of its readers some information about lining tanks with sheet lead. Is it necessary to tin the edges of the lead when round irons are used, and how is the solder put on?

Note.—In lining tanks with sheet lead where round irons are used the seams are generally wiped. In preparing the lead it should be laid out on a clean, smooth floor. A piece of lead about 3 inches wide and 10 inches long, one end curled in a circle for a handle, is used to pat the lead smoothly all over. After this is accomplished the lead is cut in sizes that will make the least number of seams in the tank, and if possible these seams will be brought into the corners in all cases. The edges of the lead from ¼ to 1 inch each side of the seam should be cleaned bright with the shave hook. The lead beyond this cleaned line may then be covered with soil to prevent the solder extending beyond the seam, or if strips of paper are pasted along, using good flour paste, the same service will be rendered. The lead lining after being prepared is placed in the tank and the method of securing it depends upon its size. In some cases, as with a small tank, it will only be necessary to turn the edge of the lead over the edge of the tank and secure it with nails. If the tank is large it will be necessary to fasten the lead at regular points in the tank by means of what is known in the trade as a bull's-eye. The bull's eye requires a concave surface to be made in the wooden portion of the tank about ½ inch deep and 2½ or 3 inches in diameter. After the lining is in the tank it is beaten smooth into these hollow spaces with a piece of sheet lead and fastened with a screw or nail. Then its inner surface is scraped clean and bright with a shave hook, and the space around it either covered with soil or paper pasted on to prevent the solder splashed against the bright surface in tinning it from adhering beyond its space; then, with a wiping pad, the space is wiped flush with solder. This makes a very firm support to the whole lining. The

lining having now been adjusted in the tank and secured by nails at intervals of 4 to 6 inches along the seams, the wiping of the seams can be commenced. With a large pot of solder at the right temperature it should be splashed along the seams and wiped with the pad until the bright places are thoroughly tinned and a sufficient quantity of solder placed along the seam to permit of a good strong seam being wiped. Here is where the round iron is brought into use. As the solder has been splashed on the seam with a splash stick and ladle, the pad should be used to keep the solder in a heap in the center, and naturally it would cool to an extent that it could not be wiped, as a space of 2 or 3 more feet, according to the skill of the operator, will have been prepared. The seam, however, being well heated and the solder almost in a condition for wiping, the red hot round iron is moved along the seam until the whole mass is again in a fluid state; and while in this condition a clean pad, to which some tallow has been applied, is used to finish the seam. On horizontal seams little difficulty will be experienced, but in the upright seams more trouble will be found. But if the workman is skillful, there is no great difficulty in completing a neat, strong seam, with the metal at a sufficient heat to fuse thoroughly and not to be porous so as to leak.

Collapsed With a Vacuum Valve.

From S. J. L., *Catasauqua, Pa.*—My opinion as to the cause of the coffee boiler, referred to by "M. A. C.," Petoskey, Mich., March 16, collapsing, is that the vacuum valve should be on the hot water pipe and not on the cold pipe (or supply), as the hole in the delivery pipe is usually small and is liable to be closed by sediment. I have had considerable experience with copper boilers, and have found that the hot water pipe is the place for the vacuum valve, the reason for which is clear.

Inside Cold Air Duct.

From B. REESE, *Odessa*.—I notice the inquiry from "Spec. Spencer" in *The Metal Worker* of March 16, and having had no experience with inside cold air ducts would ask some of the Northwestern furnacemen to supply the information. I know that in Nebraska and Dakota the use of an inside cold air duct is quite common and necessary, as the outside air is frequently driven along at the rate of over 30 miles an hour and at a temperature of as much as 35 to 40° below zero, and under such circumstances it is quite probable that it would pass through the furnace without being properly heated, and as a consequence the building would not be comfortably warmed. Whether or not some cold air is taken from the outside when the inside duct is used is a question I should like to have answered. It is stated by some authorities that an ordinary window leaks 8 cubic feet of air per minute, and if only inside air was used leaks to this extent would provide ventilation, but in that section of country double sash are used for the pur-

pose of preventing leakage of air and also of the too rapid cooling of the air in the room by the excessively cold temperature of the air on the glass, so that little ventilation could be depended upon under such circumstances from the windows. I should not desire to live in a house where the furnace had no other source of air supply than from the house itself, for while a revolution of the air in the house tends to economy in heating it provides no ventilation, which I consider of great importance.

An Engineer's Education Wanted.

From J. S., *Omaha, Neb.*—Please give in *The Metal Worker* a method and scale for finding how much radiation will be required to heat a room, for example, 50 x 22 x 13. What would be the best way to set the radiators? Please give a scale stating how many square feet of radiation is exposed in 1 foot of wrought iron pipe from $\frac{1}{4}$ inch to 2 inches. Give the tables for radiation for both steam and hot water heating. What per cent. of increase in heating surface is allowed in frame buildings over brick or stone buildings? Is there any difference in the allowance made for walls, doors and windows?

Answer.—The secret of successful heating may be truly said to lie in calculating the amount of heating surface required for different buildings, and the information desired by our correspondent covers too much to be treated in a limited space. He will find a chart for calculating areas and cubic contents that will be of some service to him in *The Metal Worker* of December 8, and an article that tersely covers the subject in which he is interested will be found under the head of Hot Water Heating in *The Metal Worker* of March 2. To get the best rule on the subject about which he makes inquiry he should read some of the books that are published in reference to it. Among those that we recommend are "The Metal Worker Essays on House Heating," "Steam Heating for Buildings," by William J. Baldwin, and "Hot Water Heating and Flitting," by the same author.

The room mentioned contains 14,300 cubic feet, and in hot water heating it might be safe to calculate on one square foot of surface heating to 30 cubic feet of space; therefore 480 square feet of radiation would be required. In steam heating one square foot of surface might be used to heat 50 cubic feet of space, and 285 square feet of radiation would be needed. In hot water heating for houses or smaller rooms one square foot to 25 or 30 cubic feet of space, according to the character and exposure of the building, is used; and in steam heating work one foot to 40 or 50 cubic feet of space is generally used. One square foot of glass surface, as it is exposed in the window, is supposed to have the same cooling effect as 10 feet of ordinary wall surface. To be able to use the rules they should be read in full and studied at some length, and then applied with

considerable judgment to secure the best results. The surface exposed in different sizes of pipe is given in almost all price-lists of pipe and in the books recommended. Radiators should be set in front of a window in preference to any other location in a room.

A Detail of Construction.

From A. S. R., *Saratoga Springs, N. Y.*—Would you kindly inform us through *The Metal Worker* if expanded steel flue in a cast iron house heating boiler head are more likely to leak from unequal expansion than when in a steel head? Is an all steel boiler shorter lived than an all cast iron one? We claimed that an expanded flue is the most sensible of any system of flue connection, as all high pressure boilers and locomotive boilers are put together in that way. We would like to hear the opinions of the experts on this matter.

Note.—The form of connection in most general use is of the expanded flue character; and we should prefer to have our practical readers report as to which of the two flue connections mentioned is more desirable. The durability of boilers is a question on which opinions differ, the popular opinion being that as a house heating boiler is not in use in summer a wrought iron boiler suffers more than the cast iron boiler under the same conditions. Wrought iron boilers have been in use for power purposes for more than a quarter of a century; and an all cast iron house heating boiler that was installed in a residence in 1859, doing constant service until 1894, is now doing service as a radiator in the salesroom of a heating contractor, and is apparently in good order.

Quality of Tin Roofs.

From G. L. P., *Kentucky*.—The boss takes *The Metal Worker* and I find it both interesting and instructive. The views of your correspondent in the issue of March 9 on the quality of tin roofs struck the nail square on the head, and to make his article complete I would add that the tin plate factories now in operation and in contemplation in this country are doing more to kill the goose than all other agencies combined. In the first place, by seeking cheap metal and cheap methods of manufacturing tin plate, nine-tenths of them are turning out a miserable quality of plate, and in a few years, at the pace they are now going, their occupation will be like O'hell-o's, for the simple reason that consumers will have to look for some other material for roof covering than tin orterne plate, so that in a short time it will only be a question of the survival of the fittest. When I look out of the back window of my shop I can see within a few feet of me a tin roof that I put on 25 years ago that is as sound to day as the day it was put on, and a very flat roof at that, and when I look out in another direction I see another roof that I put on but a few years ago that is leaking on account of rusting out, then I am forced to the conclusion I have expressed. I have been using American plate for the past two years and find it uniformly poor in quality, although I bought the highest priced goods in the market. The thing in a nutshell is that our tin

plate manufacturers are killing their products with acids and making use of black plates unfit to be coated.

Sheet Metal Launch.

From LOUIS GIGLAS, Washington, D. C.—As the inquiries continue to come on concerning the sheet metal launch, a description of which appeared in *The Metal Worker* of November 10, I wish for the benefit of the readers of *The Metal Worker* as well as myself you would publish the statement that I will not furnish any more drawings and specifications for the launch. All information concerning the motors can be obtained by addressing the Sintz Gas Engine Company, Grand Rapids, Mich.

Is Trap Ventilation Necessary?

From A. B. K., Burlington, Vt.—There has been some discussion here relative to the ventilation or back airing of traps. I claim that there is no advantage in the practice except to prevent siphonage; and where there is no danger of the trap being siphoned by the use of some other fixture or other means, it is better not to run any back air pipe to make the drainage system complicated. This is an old question, but is one that is not fully settled here; and I would like the testimony of the best authorities on this point.

Note.—English writers on this subject all agree that every trap should be ventilated. This subject has been treated in the works of W. P. Buchan, P. J. Davies and S. S. Helyer. The Board of Health of New York City in preparing the plumbing code of the city decided that such pipes were necessary. The opinion of these authorities, however, is not accepted by some eminent plumbers, who entertain ideas similar to those of our correspondent. We should be glad to have this subject discussed.

Trouble with Furnacemen.

From SANITARY, Connecticut.—I have read the letter of "Tinsmith" in *The Metal Worker*, March 23, and considering his job from a humane standpoint, I see nothing to be proud of. Commercially he is to be congratulated on having heated the house; but can it be considered to be a sanitary job? The old proverb for health is to keep the head cool and the feet warm and, if I mistake not, he has reversed the conditions. How can the floor of a house be warm if the cellar is used as a cold air chamber? What kind of a place is a cellar to live in? Is the air that comes from a cellar any better because it has been superheated? Would it be possible to get a temperature of 94°, 8 feet from a register, if it was not superheated? Will not the air to warm a given room have to be very much hotter if the pipes are small, as he recommends? His recommendation on comparing with the job shown March 2 amounts to reducing the pipes 1 inch in diameter. A 7 inch pipe compares with an 8-inch pipe as 49 compares with 64, a reduction of one fourth, to be made up by increased temperature and velocity, both of which are wrong from a sanitary standpoint. Increased temperature means more frequent action of the lungs to get the required oxygen.

Increased temperature means a dryness of atmosphere that parches the skin and membranes to irritation, coughs and inflammation. Increased velocity means drafts on the body to effect evaporation of moisture, causing a tax on the system that is paid by indigestions. How much ventilation could be ventured upon with so little inflow of air? How many changes of air per hour could be had with such small pipes? The furnace mentioned is small and would have to be run hard, to its detriment and to the delight of the coal dealer. The recommendations made are in a commendable spirit to help a brother and many may differ with me, but I think they reflect more of cheapness than of progression. The furnacemen are sneered at by other heating men and it is largely their own fault. They have followed a rut and let price govern their practice till, taken as a whole, there is less in it to be proud of than there should be. Instead of following the suggestions given the trade should advance. The underlying principles should be studied and aggressively pushed. How many furnacemen really say what the heating arrangement should be? They are so few that they are lost to sight. The veriest hatchet and saw carpenter dominates over the furnaceman and tells him: "What I say or nothing." No matter how little he knows, what he says goes. Owing to the character of furnace work, as a whole, other methods of heating that are far more expensive and not to be compared with an ideal job of furnace work are supplanting furnaces, though in effect they have little but novelty to recommend them. Furnacemen, wake up! Let us educate our less competent brothers to a higher standard and maintain it.

Boiler Siphons.

From W. C., Paterson, N. J.—Will some reader of *The Metal Worker* explain why water is siphoned out of a boiler which is used for heating purposes?

Note.—If more information as to detail was given in this inquiry, it is probable that a more satisfactory answer could be furnished. We assume that a boiler has been set in a room above the kitchen in order to heat the room, and that but very low water pressure is found in the system at some portion of the day. Then by opening the faucets below the boiler the water is siphoned out. It is possible that the delivery tube in the boiler has no hole in it at the top, or that the hole is stopped by sediment which causes the trouble.

A Peculiar Furnace Experience.

From C. S., Cleveland, Ohio.—Answering article of E. E. Palmer, Harrisburg. "A Peculiar Furnace Experience." In *The Metal Worker* of March 16, will say that he points out the cause of our trouble at fire place flue. We anticipated the trouble there ourselves, stopped it up and made a trial with no better results. In regard to the cause of objectionable drafts at present in the rooms that we endeavored to obviate, we know that a good portion is due to large glass surface in bay window. The room is never closed off; sliding doors are left open at all times. We also note

what Mr. Palmer says about too much ventilation in fire place and not being able to warm certain rooms; we have had cases where we could not warm certain rooms until we opened fire place flue. The sketch shows the cold air register placed at the northwest end of room, and if leaks do occur at windows it seems to us the leakage should act as a damper at least on the cold air register, and not allow hot air to rise from it. This is quite a puzzling and peculiar experience to us, for we are at a loss to know why it does not work, having a fall of about 8 feet to the furnace. We would be pleased to hear from Mr. Palmer again through the Letter Box.

In answer to article of "R. S.," Brooklyn, N. Y., will say that he seems to be of the same opinion as our friend Mr. Palmer of Harrisburg, and that the fire place is the cause of our trouble. We have experimented there to no avail, shut off the faucet, so to speak, but did not stop the leak. Will "R. S." be kind enough to let us hear from him again?

From H. R. D., Brooklyn, N. Y.—I see in *The Metal Worker* of March 9 an article from "C. S.," about a peculiar furnace experience, and in my opinion it is so peculiar that I do not wonder at it not working. I think the brick casing of the furnace is not properly constructed. It should be made of two chambers, an inner one inclosing the furnace proper, with openings at the bottom through which the air enters to the furnace, and an outer casing inclosing the inner casing with a space between the two and receiving the cold air supply at the top of the outer chamber. This cold air receives some heat in passing down by the inner casing and enters the air spaces at the bottom to the furnace radiators. "C. S." has no inside chamber to his furnace, which he should have. The mason work of the inside chamber should be well pointed and the joints tightly made and then whitewashed, as bricks absorb and give off a great deal of heat. The inside chamber should also be lined with tin. He introduces his cold air at the wrong place. It should be at the top, and the cold air pipe from the room in question should be connected in the same manner. This done, I see no reason why the furnace should not work properly if the furnace is large enough and it is set properly.

Which Is Best for Furnace Tops?

From J. C., Cleveland, Ohio.—Answering "T. O. M.," Adams, N. Y., on "Which is the best for furnace tops?" in *The Metal Worker* of March 16, will say that the cold air in question is taken from inside the house in a reception hall under stairway opening, being 27 x 27 and cold air duct the same. The rooms that give us trouble open into this hall both first and second floors. Off the furnace are taken four 10-inch and four 9 inch hot air pipes. From the above it will be seen that our air supply is ample. The furnace is centrally located, and we are sure it is not in the air supply. We would be pleased to hear from "T. O. M." again on the subject.

A strike of seamen at San Francisco for \$5 a month increase in wages has been met by the shipping of Japanese crews.

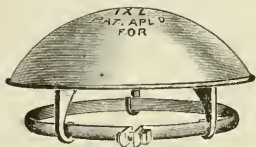
PLUMBING and GAS FITTING.

Open Work Fixtures.

In the large cities it is noticed by real estate agents and others who have property to rent that special favor is shown to dwellings where open work plumbing fixtures are used. This demand has been gratified for a long time as far as lavatories and water closets were concerned, but the economical disposition of the builder has held him to the wood incased bath, although persistent effort has been made to introduce cast iron baths and sheet metal baths of different character. It is claimed by those who are doing the work that the people are now demanding an exposed bathtub, and the manufacturers of such goods are constantly increasing their output to meet the demand. It is claimed that it is easy to sweep and clean around such fixtures, as there is no hidden space for an accumulation of dirt of any character. Various goods are made to meet these requirements, and plumbers will do well to keep informed of all the different kinds.

The I X L Vent Cap.

The accompanying illustration shows the I X L vent cap made by the Zero Valve Company, 304 Seneca street,



The I X L Vent Cap.

Buffalo, N. Y. It is made of malleable iron, and can be attached to any piece of waste soil pipe without calking and joined by simply adjusting a set screw, as no hub end is required. A wrought iron band clasps the pipe and is tightened to suit the size of the pipe. It is intended to cover the fresh air inlet or the top of the ventilation pipe above the roof.

Sanitary School Buildings.

It is quite possible that the following report to the School Board on the Mt. Pleasant school building at Nashua, N. H., by Irving A. Watson, secretary of the State Board of Health, is applicable to the buildings in many other cities.

The plumbing is faulty in several particulars and should at once be reconstructed. The effects in this respect are apparent to any one cognizant with what constitutes good plumbing. The service is deficient in traps and trap ventilation and defective in construction. The soil pipe should be ventilated into the open air above the roof instead of into the chimney flue. This pipe

should be of iron, with perfectly tight joints. The present pipe, constructed of sheet iron, with loose joints, is dangerously defective, and should be remedied at once.

In my judgment, the conditions which are the most dangerous to the health of the pupils consist in the so called ventilating system and its attendant evils. A plan like this, which provides the several rooms with an outgoing flue, but entirely overlooks the matter of providing for the entrance of fresh air, is an inexcusable oversight or neglect in providing for adequate ventilation. With outgoing flues which enter the several chimneys there is, especially in cold weather, a constant though slow exhaust of air from the schoolrooms, to supply which loss there is a forced draft upon every crack and crevice in the schoolroom. In the winter, when the windows are closed and the building made as impervious to outside air as possible, these flues amount to practically nothing in the way of securing fresh air for the schoolrooms. By reason of the exhausting force of the air escaping through the chimney flues the suction is put upon all the crevices that will admit air, including the defective ventilating flues from the water vault, as well as, possibly under certain conditions, from the soil pipe itself.

The fact exists that under the present system any defective connection with the public sewer or any unsanitary condition in the basement of the building is exceedingly liable to endanger the health of the school children, because the actual exhaust of deleterious gas, &c., must necessarily be through the school flues. These conditions in themselves constitute an ever present menace to the health of the pupils, but it is by no means all.

Aside from what has already been pointed out, the system of ventilation is deplorable; in fact, it can hardly be said to constitute a system. It is conceded by physicians, sanitarians and engineers who have made schoolhouse sanitation a study, that 1800 cubic feet of air per hour per pupil is necessary in order to secure at all times a healthful atmosphere in the schoolroom.

Many authorities place the figures considerably higher. In order to secure such a condition, there must be ample flues for the admission of fresh air, as well as corresponding exhaust flues.

The present system is practically one of direct radiation, which simply heats the same air over and over. A schoolroom that does not receive the amount of air indicated above soon reaches a state which is regarded as detrimental to the health of the children by reason of the excess of impurities which soon accumulate by exhalations from lungs, evaporations from the skin, &c.

It is conceded that unless the ventilation is ample to hold the carbonic acid gas thrown off chiefly by the lungs to below 10 parts per 10,000, the ventilation is insufficient. It is desirable that the carbonic acid gas shall not accumulate to an extent of more than 6 parts per 10,000, and in order to maintain this degree of purity in rooms like those of your schoolhouse, it would be neces-

sary to introduce constantly a large amount of warm fresh air during the winter season.

It is, perhaps, not necessary to elaborate this point at the present time. I only desire to impress upon your board the great need of better ventilation for this schoolhouse. I believe that its greatest sanitary defect is in the lack of ample ventilation.

Niagara Ejector.

The illustrations herewith show the Niagara ejector manufactured by S. J. Putnam, Princes Bay, N. Y. Fig. 1



Niagara Ejector.—Fig. 1.—General View

shows the ejector for use in urinal stalls, to be secured into the side of the flushing pipe, which passes across the stall. Fig. 2 shows the ejector with clamp for fastening to a slate slab when the supply pipe is run behind the slab out of sight. As may be seen from the cuts the lead supply pipe may be run to this extension and connected to it by a wiped joint. The ejector can be used



Fig. 2.—Ejector Arranged for Attaching to Slabs.

In connection with an automatic flush tank or owing to the small quantity of water used may be left to run continuously or operated by a stop cock. In operation a thin sheet of water is thrown against the slab through the slot opening as shown in Fig. 1. Fig. 2 shows the cap of the ejector partly removed and the hole through which the water is delivered. The seat against which the cap fits is cut away on the under

side for one-third the circumference so that the spray is spread. The force of the water at the outlet coming against the internal spherical head of the screw cap throws a thin fan shaped sheet of water against the back of the stall and over into the corners, flushing the entire surface.

A Unique Gas Fixture.

BY A VISITOR.

A guest of the Pen and Pencil Club of 1026 Walnut street, Philadelphia, finds considerable pleasure in being shown through their club house, the various rooms of which are adorned with mementoes of sporting, political and historical interest. No room, however, excites so great an interest and leaves so fixed an impression as the "Pirate's Den," from which is taken the subject of our illustration. This room is naturally rude and rugged in its finish and furniture. The ceiling and walls are made of slabs of natural wood, on which it is incumbent that

Thawing Frozen Pipes with Electricity.

Mr. Edmunds informs us, says the *Electrical Review* of London, England, that he has been making some experiments lately with most complete success in what we think is a new and important application of electricity to domestic use. He, like many others, has suffered the inconvenience of having his gas and water service frozen during the late severe weather. It occurred to him that a resistance, suitably protected, might be introduced into those pipes which were most exposed and least easy of access with flame or hot water or other ordinary method of thawing. He had a special wire made in which the current was conducted through a highly resistant metal, insulated with a fire-proof medium that was also a non-conductor of electricity. The whole was inclosed in a metal tube, which could be drawn down to make a compact wire or tube that was externally a conductor of heat, but not of electricity, thus preventing loss of current and

oxide on account of the high temperature necessary to fuse it, and never gives the trouble caused by other alloys. Sheet lead scrap or tea lead make good solder, and the failure to clean solder by the use of sulphur is often due to the fact that no tin, or not enough tin, is added after the process to make up for what has oxidized, and also to not removing the sulphur by the use of tallow.

Suit for Defective Plumbing.

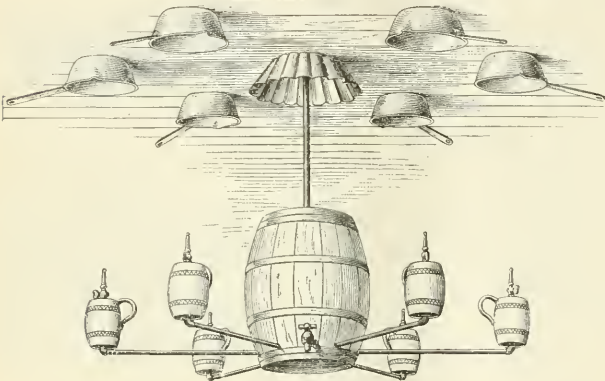
A man in this town, says the New York *Sun*, brings suit against his landlord for damages for the loss of his daughter, whose death he attributes to the insanitary condition of premises occupied as a dwelling house. The principle governing a landlord's liability in these cases is well settled in England, but is hardly likely to be established in the same way in this country. The rise of the doctrine there is peculiar. The first suits were brought by landlords against tenants for non payment of rent, resisted by the tenants on the plea that the premises were insanitary.

There was a statute in existence designed apparently for the protection of the tenants, to which they generally appealed to sustain their side of the case, which, under the said statute, they generally lost, owing to its phraseology. But in the course of construing the statute the courts laid down a series of principles which soon combined to create a general case lying altogether outside of the statute. While this general case did not sustain the tenant in his refusal to pay rent, it did give him his action against the landlord for damages as to injury received in health through an insanitary condition of premises.

Next came the cases of householder and the town, landlord and the town, and, finally, contractor and the town. The duty of the town under general statutes is to remove garbage effectively. The householder would bring his action against the town for injury to his health through neglect to remove the garbage promptly. The town pleaded a proper contract made with a contractor. The decision was that the duty of the town was absolute; it was responsible to the householder, to whom it must respond, and might afterward pursue its own action against the contractor for any neglect under his contract. If the injury arose through defect in the sewer or other matter under the control of the town, the landlord had his own action against the town, but could not plead the town's neglect as a defense against his tenant.

And so on. The net result at the present time is that the health of the inhabitant is treated as the dominant interest, on the principle, *Salus Populi suprema lex esto*. If injured, the person with whom he immediately deals must respond. If this person's loss be due not to his own neglect or misdoing, but to that of the town, the town in turn must respond to him. The only recourse left to the town is against a contractor, provided one of these and not its own officers be to blame. From this it will be seen what a very long road statutory construction has yet to travel in this country before anything like these principles can be established.

HIGGINS & GRIFFIN have bought out the plumbing shop of C. B. Allen & Co., Salem, Mass., and will continue business at the old stand.



A Unique Gas Fixture.

each member shall carve his name, and no little artistic taste and skillful handiwork is displayed in fulfilling this requirement. Some are on the ceiling, some against the rafters, some run horizontally, others obliquely and a few are upside down. Seats are made of empty beer kegs, cushions being made of coils of rope. These surround a massive table, and the awful rules and regulations which govern all who enter this apartment hang conspicuously on the cupboard door. The den is lighted by a gas fixture. The pendant drops through a Turk's head cake mold of tin nailed to the ceiling and passes down into an empty "sextle" beer keg. Six branching arms radiate from the keg to the burner key. The burners pass up through stone beer mugs, having holes drilled through the bottom. Above each burner a bright tin stew pan is nailed to the ceiling, the handle pointing away from the center. This novel fixture is well adapted to its surroundings, and the brilliant light it sheds is no more brilliant than the repartee that passes between frequenters of this by no means gloomy den.

MAYOR COOK of Gloucester, Mass., has signed a new plumbing ordinance which is now in effect in that city. It calls for a water test, trap ventilation, local vents to closets, permits and plumbing inspection.

electrolysis. The results were most satisfactory. This "thermic" wire was introduced into the waste pipe from a bathroom at the north side of his house, which entered a fall pipe some 20 feet from the ground and which was easily frozen. The thermic wire was introduced from the outside. At night a small stream of water trickling down froze, forming an icicle some 12 inches long and 1½ inches thick, completely locking the waste pipe. The thermic wire having been previously connected with Mr. Edmunds' electric light circuit, at 50 volts pressure, when current was turned on 4 amperes flowed through it, and in four minutes a complete thawing was effected and the waste service was cleared.

Cleaning Solder.

BY OLIVER TWIST.

To make and to keep good solder it is necessary to be very careful as to what is put into the melting pot, for old lead pipe, lead tacks, &c., often contain zinc, antimony, copper, arsenic and other ingredients. Type metal is sometimes used under the impression that it is lead, whereas it is alloyed with 20 per cent. of antimony, which is as ruinous to solder as is zinc. If iron be contained in solder it is readily removed by stirring and skimming, as it is usually in the form of a powder or

Toronto Master Plumbers.

The Toronto Master Plumbers' Association held their annual meeting in Forum Hall on Monday, March 25, and elected the following officers:

Thos. Cook, president.

W. I. Burroughes, first vice-president.

Geo. Guest, second vice-president.

I. K. Allison, secretary.

A. Fiddes, treasurer.

W. I. Garratt, sergeant-at-arms.

The new officers of the association have a large amount of work before them in getting out a new retail price-list and new by-laws for the association, &c. A special committee was appointed to wait on the city to obtain amendments to the city plumbing ordinance to reduce the license fee, and to restrict the granting of licenses to qualified plumbers only, also that all drains shall be of cast iron and under the control of the plumber, and that in future no license shall be granted unless the applicant has passed a practical examination. It is also proposed that steps will be taken to form a Dominion or National association. The Toronto association is now in a flourishing condition. Twenty-five new members were enrolled. Trade in the city is fairly good and the prospects for a good summer are favorable.

The Report of the Essay Committee.

Under date of March 30 the following report will be sent to local associations of master plumbers by the Essay Committee of the National Association of Master Plumbers, composed of Jeremiah Sheehan, chairman, Thomas Cantwell, Frederick Abel, John F. Reardon and F. R. O'Neill:

The Essay Committee, appointed to report a series of topics to be submitted to the master plumbers for treatment at the next annual convention, beg leave to submit the following list of subjects, which it regards as timely and which relate directly to the main purpose of our association. In order that the committee may have time to review the essays, which it is necessary to do before presenting to the convention, all essays must be in the hands of the chairman of the committee on or before May 15.

Is the association of supply houses beneficial to the master plumbers of the country? If not, how can it be made beneficial? This subject is suggested because the most important event of the year, having a direct relation to the interests of the plumbing trade, has been the action of all the leading supply houses and manufacturers of the country, entered into for the purpose of united action on questions of policy in dealing with master plumbers and others who are in the relation of retailers. Possibly there may be suggestions as to some means by which, through the intermediation of the National Association of Master Plumbers, this new organization may be made of avail as an agency of good, whereby some of the evils which have impaired the prosperity of the plumbing business throughout the country may be eradicated.

To what extent may municipal legislation be relied upon to enhance the standing of the master plumber? Is it not in some cases a bolster and an indorsement to the unworthy? The utterances of many master plumbers during the past two years have made it a mooted question whether, in view of the laxity, favoritism and even corruption which characterize political govern-

ment, plumbing ordinances can be relied upon to accomplish the purposes which they are designed to serve. To invite full and candid discussion, the above topic is framed in a form seeming to favor the negative.

Would not the interest of the master plumber be served by an agreement that master plumbers should not handle tools? This question is suggested by the fact that many master plumbers are heard to complain that local associations, although intended to benefit all their members, work really to the disadvantage of some. The complainants, as a rule, are men who carry on plumbing as a business, rather than as a trade, and who hold that while membership in the association is accepted by the community as a guarantee that a plumber is competent and reliable as a contractor, his competitor who invests his money in advertising the trade and raising its standard is placed at a disadvantage when it comes to making estimates. In other words, the proposition is advanced that all members of a local association should be strictly master plumbers; while if they continue to handle tools they compete as master plumbers, but do the work as journeymen.

What should be the qualifications of a member of a master plumbers' organization? In other words, is it sufficient that a candidate shall be competent to wipe a joint? This subject is intended to elicit suggestions as to the improvement of the standard of membership in master plumbers' associations. The first purpose declared by all such associations is that of elevating and improving the plumbing business so that not only the plumber but the public will be benefited. It is urged by those who are not satisfied with progress thus far made that it is too easy a matter to become a master plumber, and that the standard in place of being bettered is lowered by the indiscriminate admission of candidates for membership. For instance, should a candidate be able to estimate the value of work and material before calling himself a master plumber? Should he be able to pay his bills? Or is it enough that he shall be able to pay an initiation?

What are the abuses that have been developed in the master plumbers' organization? What is the remedy? This question is suggested by the indications that the trade has not attained the prosperity which so many of us confidently expected would result from organization. If this failure be due to the faults of organization or to the practices that have grown up under it, it will be timely information to detail just what these faults and practices are.

Should not the master plumber decline to bid as a sub contractor? Should he not insist that the plumbing be reserved from the general contract? The above question is suggested by the fact that the contracting business has become so general that even the most incompetent carpenters are now recognized as general bidders, and the architects in their desire to avoid a division of responsibility are disposed to require the plumbers to submit their bids to these men. In many cases these general contractors are utterly irresponsible in a financial way, and the trade has suffered greatly through their failures. It should require no argument to demonstrate that a man who is competent to design and construct a good, handsome and sanitary plumbing system in a residence is too good a

man to be subordinated to such incapables as are many that are now bidding on even high grade work.

TRAPS AND VENTS.

ALL the clay sewer pipe manufacturers of Ohio, Virginia, New York and Pennsylvania, except one, have formed a combination under the terms of which all sales are to be made from Akron, Ohio, and Pittsburgh, Pa.

CONSIDERABLE information about the sewerage in foreign cities is to be found in No. 173 of Vol. 47 of the Consular Reports to the United States Government.

THE GOULDS MFG. COMPANY have just begun the erection of a new addition to their extensive works at Seneca Falls, N. Y. The building is to be of the slow burning type, will be 86 x 35 feet in size, the frame work, beams, columns and roof truss of steel, and two stories in height, with basement for the storage of castings. The main room for heavy machines and erecting purposes will be 22 feet high and will be served by an electric bridge crane of 10 tons capacity. The walls will be of brick with the skylight and upper windows glazed with ribbed glass. It is expected that the building will be completed about June 1.

JOHN BIRMINGHAM, South avenue, Bridgeport, Conn., who has been making a specialty of jobbing plumbing work, intends to go into contract work as soon as the building season opens.

WOODRUFF & WHITE succeed O. I. Jones in the tinning and plumbing business in Westport, Conn.

THE HERCULES FLOAT WORKS is the name of a new corporation organized in Springfield, Mass., for the manufacture of the Hercules seamless copper ball floats for steam traps, receivers, &c. The officers of the new company are: President and treasurer, Harry S. Anderson; clerk, R. H. Parkhurst; directors, H. S. Anderson, H. H. Parkhurst, Frank Engelhard and Fred H. Engelhard. Manufacturing room has been secured at 54 Taylor street. The hollow copper ware of which the company make a specialty is produced by a new patented process without seams and of a quality superior, it is claimed; to hard rolled metal, being perfectly even and homogeneous throughout, without flaws and wholly impervious to water.

J. J. CASHEN, who was for a long time with Wm. B. Cashen on State Street, Meriden, Conn., has established a business for himself at 65 Church street, where he has a commodious store and a good stock of plumbing and heating goods.

THE MECHANICS' SUPPLY COMPANY, Quebec, Canada, are inserting in the business directories published in Montreal, Toronto, Quebec and Halifax a colored advertising page in which they direct attention to their extensive line of goods. Among the particular articles noted are steel clad baths, Jenkins valves and packings, L. S. Starrett Company's fine machinists' tools, steam pipe packing, &c.

AN OBSTINATE blaze was extinguished by the Fire Department last Saturday night, located in the basement of James Duffy's plumbing shop, at 124 Main street, Hartford, Conn. The loss was covered by insurance.

R. M. WILSON of Rome, N. Y., reports from the New York office, 92 Walker street, New York, that a nice trade is being done in nickel plated and copper boilers. It is stated that planished copper boilers, although heavily lac-

quered, do not hold their color satisfactorily in use, and that a growing demand is being felt for a nickel plated boiler, as the nickel plate can be kept polished bright without destroying it.

WHEN two plumbers entered into a copartnership agreement to carry on the plumbing business in Kingsbridge, N. Y., they inserted in the articles a clause to the effect that if either of the partners at any time took to the use of intoxicating liquors to the extent that it might interfere with the conduct of the business, the sober partner might have the right to ask for the dissolution of the firm. Acting on this clause, one of the partners made an application in the Superior Court asking that the firm be dissolved and a receiver be appointed. He says that the junior partner has not respected the agreement. The other partner contested the motion, stating that he had affidavits to the effect that he had never so far forgotten the clause as to put the business of the firm in jeopardy. Decision was reserved.

ALLEN WEINHARDT will go into the plumbing business with John Freitag in the place formerly occupied by Dickhout on Wabash avenue, Terre Haute, Ind.

S. A. WORTHING has purchased the interest of Mr. Osler in the plumbing business of Brock & Osler, Redlands, Cal.

A DEPUTATION of employing plumbers, Toronto, Canada, consisting of Messrs. Allison, Burroughes, Beavis, Cook, Fiddes and Guest, had an interview with the City Engineer recently. They asked that the license fee now paid by plumbers be abolished, and that the clauses in the city plumbing by-law providing for the examination of plumbers, with a view to testing their efficiency, should be enforced before applicants are allowed to undertake work as an employer.

THE APPLICATION of Blake & Murphy, Galesburg, Ill., for a plumber's license, with J. E. Maley and D. Morley as sureties, was granted by the City Council.

AN ORDINANCE regulating the licensing of plumbers in the city of Bradford, Pa., has been passed.

A. R. JORDAN is making improvements in his plumbing shop on West Broad street, Westerly, R. I.

CURTIS BROS. will open a new plumbing, heating and gas fitting establishment at 597 Main street, Dubuque, Iowa.

THE FIRM of Daggett & Schwie Company, Mason City, Iowa, have been dissolved. Messrs. Daggett and Schwie will continue the plumbing and heating business and C. Currie & Son will run the hardware store.

FRED. DOYLE and JOSEPH CASPAR compose a new plumbing firm at Houghton, Mich. They are building a new shop on Sheldon street, which will be 16 x 40 with plate glass front.

THE FIRM of Smith & Jeffs, plumbers and tinsmiths, at the Highlands, Mass., has been dissolved by mutual consent. Mr. Smith having purchased the interest of his partner will carry on the business at the old stand.

ALBERT C. WEIANT, New Britain, Conn., visited *The Metal Worker* office this week and showed a new pipe support for which he is taking out a patent. The support can be attached quickly, and holds the pipe far enough

away from the wood work to permit the use of a pipe wrench and prevent unions, cocks and fittings throwing the pipes out of a straight line.

THE GLAUBER BRASS MFG. COMPANY, Cleveland, Ohio, are issuing a colored picture bearing at the top an inscription stating that "Glauber's famous stop and waste cocks are the world's best and leaders over all others." At the bottom, several styles of their cocks are shown in natural color.

THE S. H. MORGAN & Co. plumbing and gas fitting firm have filed articles of association with the county clerk at Detroit, Mich.

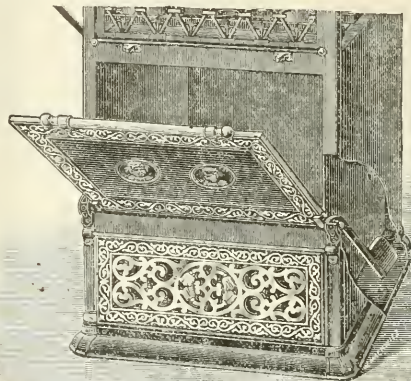
JOHN F. DEEDY opened his new store in Rogers Block, at Salem square, Worcester, Mass., last Saturday, and in the evening he had a formal opening. Visitors found one of the most thoroughly equipped stores of the kind, the stock including everything in the plumbing line from the materials used in cheap houses to the costliest fixtures used in the palatial residences of mill-

rendered stiff by a special process, while at the same time they can be drawn to any extent required. Full price-lists are also given.

JOHN A. MANGOLD, graduate of the New York Trade School plumbing class of '93, intends to open up a plumbing shop at Moundsville, W. Va. As water works are being put in the town a good deal of plumbing work is in sight.

THE FOLLOWING DELEGATES were elected at the meeting held by the Chicago Master Plumbers' Association on the 25th inst., to attend the Illinois State convention to be held at Rock Island April 24: J. B. Breen, J. R. Alcock, P. Sanders, D. J. Rock, C. J. Herbert, M. L. Mandible, Charles T. Byrne, Paul Radieske, Thomas Conway and J. L. Emblen.

AMONG the new plumbing establishments recently started in Chicago can be mentioned the following: Daniel Galvin, 3246 South Canal street; Henderson & Thole, 22 North Ashland



The Quick Meal Vapor Store, Showing the Balanced Oven Door.

lonsaires. The display also contained Mr. Deedy's own inventions. The north half of the store is fitted up to show the practical working of the newest closets, lavatories, &c. It shows the latest designs in bathtubs, and the lavatories are elaborate affairs, being made of different kinds of marble. The closets are all in working order and show the different kinds of hoppers, some of them being tastefully decorated. The tanks are in keeping with the rest of the materials and are of oak, Hungarian ash, dark cherry, bird's eye maple, natural cherry, antique oak, white enamel and ash, with seats to match. In the rear are located the storerooms and the workrooms, where Mr. Deedy makes all his own traps. In the cellar are the other workrooms. The suit of rooms also includes a general salesroom and a private office.

CURTIS BROS. have leased the storeroom at 597 Main street, Dubuque, Iowa, and will open a first-class plumbing, heating and gas fitting establishment.

E. W. BLATCHFORD & Co., Chicago, have just issued a small but excellent catalogue of their lead traps and bends. The variety illustrated is very large, covering all possible requirements of the trade. The Blatchford drawn and compressed lead traps and bends are made in the same manner as lead pipe,

avenue; Thomas Forbes, 795 West Van Buren street; Clayton & Miller, 475 West North avenue.

WALTERS, REILLY & WAFER is the name of a new firm of plumbers reorganized in Fort Dodge, Iowa. They will have their headquarters in the new addition to the Doud Block.

The Quick Meal Balanced Door.

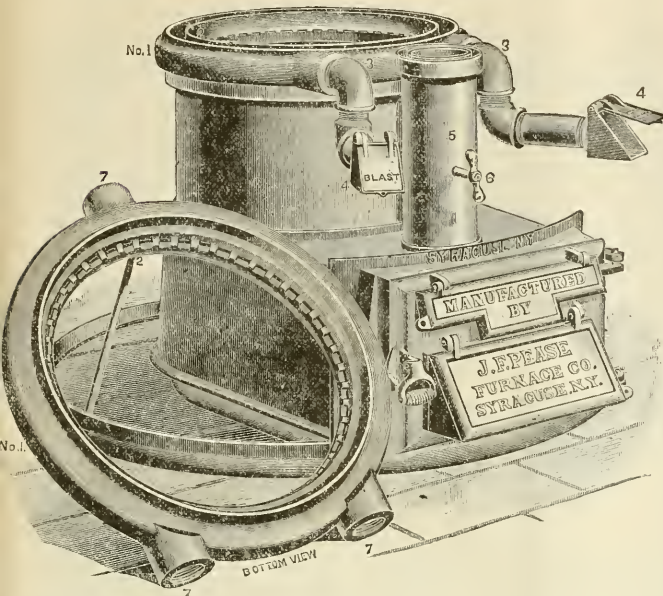
An interesting feature of the Quick Meal vapor stove, which is being offered the trade this season by the Ringier Stove Company of St. Louis, Mo., is the balanced oven door. The arrangement is such that a weight working inside of the flue and connected directly to the hinge of the oven door allows the latter to fall to a horizontal position, where it forms a convenient shelf. An idea of the arrangement of parts may be gained from an inspection of the accompanying illustration, which represents the stove with a portion of the side broken away so as to indicate the position of the weight referred to. This weight is of such a character as to balance the door and allows it to fall without noise and also without danger of breakage. When the oven is in use the weight swings toward the front, where it assumes a horizontal position and offers no obstruction to the flue.

Air Blast Apparatus.

The J. F. Pease Furnace Company, Syracuse, N. Y., have devised an apparatus for the efficient and clean burning of bituminous coal in hot air furnaces, which is illustrated in the accompanying cuts, Figs. 1 and 2. It is well

easily set, fitting into a cup joint on the top of the fire pot, and is provided with a cup joint on its top, on which the combustion chamber rests. The pipe connections and fittings can easily be put together with an ordinary wrench. These rings are provided for the Pease furnaces Nos. 308 to 320, inclusive, of the Regular Low Down Double Radi-

furnace of the J. F. Pease Furnace Company, the dome of which is somewhat higher above the outlet than in any other furnace. It is further mentioned that the use of this small sectional air blast ring aids in the combustion of soft coal, although for most kinds of this



Air Blast Apparatus.—Fig. 1.—Soft Coal Burning Apparatus, Fire Pot and Ring

known that the burning of soft coal for domestic purposes has always been attended with difficulty arising from the formation of soot, which adhered to the heating surface, clogged the flues and reduced the radiating powers of its surface, and sometimes even going so far as to fill up the smoke exit and materially interfere with the draft. To secure complete combustion of bituminous coal the system devised by the J. F. Pease Furnace Company provides for the introduction of hot air around the surface of the fire. The air being about one-quarter oxygen stimulates combustion and consumes the otherwise unburned gases. In the device illustrated in Fig. 1 the air is drawn into the ring through three supply pipes, two in the front and one in the rear. Each of the air chutes is provided with a regulating door, so that the supply of air can be adjusted to suit the draft and other varying conditions. The air is heated to a high temperature in passing through the supply pipe and through the heated ring and is distributed over the face of the fire through horizontal slots shown in the illustration. It is mentioned that the outlet area of all of the slots is less than that of the intake pipes, so that the air is discharged in full volume from each slot. Fig. 2 is a transverse section through the ring showing the form of the interior and the course taken by the air. The slots, it will be noticed, are protected by a canopy which prevents fine particles of fuel lodging in the openings when the fire is replenished. This feature is particularly alluded to and it is mentioned that it is covered by patents. The ring is said to be

ator and Tropic patterns, as well as in all sizes of the 1895 pattern. It is furthermore mentioned that they can be introduced into old furnaces of these patterns with little expense and work.

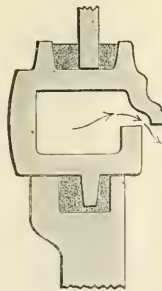


Fig. 2.—Transverse Section through Air Blast Ring.

Among the improvements brought out by the J. F. Pease Furnace Company is an air blast for hard coal also. They mention that while the combustion of bituminous coal is very much improved by the intermixing of hot air—that is, oxygen—it is also pointed out that the burning of hard coal is likewise improved by the use of similar appliances. In Figs. 3 and 4 is illustrated an air blast designed for use in hard coal burning furnaces. It is said to be particularly well adapted to the 1895 pattern



Fig. 3.—Sectional Air Blast for Hard Coal Furnaces, Correct View.

fuel a larger ring is recommended. Fig. 3 shows the correct position of the distributor, while Fig. 4 shows it with the lower sides presented to view. It is fitted to the inside of the combustion chamber immediately over the top of the pot and directly opposite the feed door. The one air supply pipe runs down the

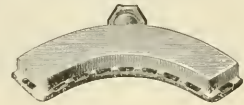


Fig. 4.—Reverse View of Section.

back of the fire pot and terminates outside the casing in an air chute with a regulating door.

THE MORTON TIN PLATE COMPANY, Cambridge, Ohio, whose advertisement appears upon another page, announce that they are prepared to commence the manufacture of Tin and Terne Plates. The brands will be Morton Charcoal, Guernsey Coke and Leatherwood Terne, all made by the Morewood process. The company have been manufacturing Black Plates since the beginning of the year, and their product has found favor among dipperers. They state that the same care that has been exercised in the manufacture of Black Plates will be carried out in the case of the Finished Plates, only high grade qualities being produced. No selling agents have been appointed by the company, their intention being to dispose of their product direct from headquarters at Cambridge, Ohio.

It is reported that the syndicate of New York and Philadelphia capitalists who are building the electric roads in and about Baltimore and Washington, have organized a company with a capital of \$4,000,000, to construct an electric railroad between New York and Atlantic City, N. J.

The use of terra cotta is becoming so widespread that the question of how to treat the surface of this material so as to render it less liable to injury and decay, without impairing its appearance, is one of considerable interest. European journals announce that an effective method of treating terra cotta has been recently introduced by E. Fortora of Naples, Italy, a place where this material is largely used for decorative purposes. Mr. Fortora recommends that the terra cotta be immersed in a bath of paraffine wax at a temperature above the boiling point of water, but below that of wax. All moisture and air are said to be expelled by this treatment from the pores of the material, and an absorption of the molten wax takes place. It is claimed that all porous material of the character of terra cotta is vastly improved when subjected to this treatment, and is, moreover, rendered quite impervious to water.

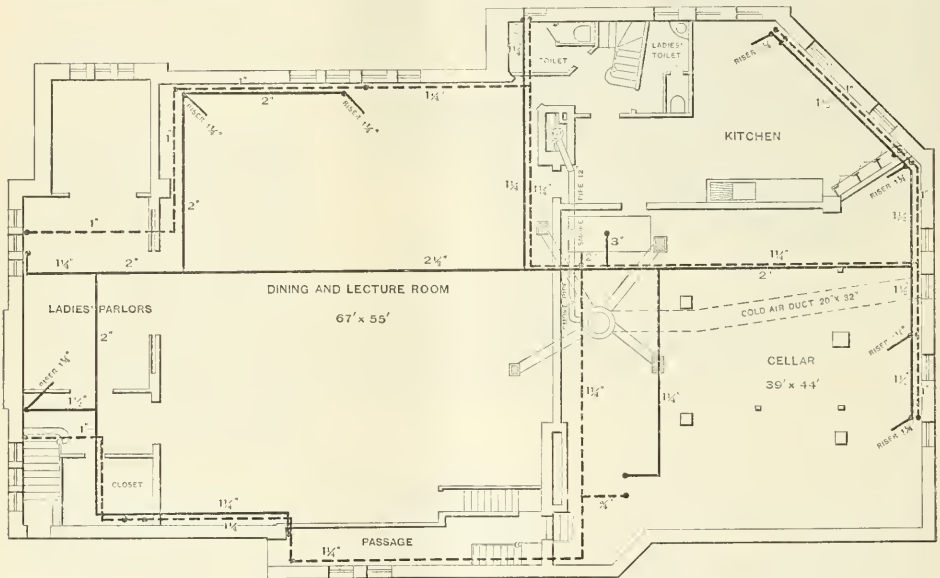
STEAM AND HOT WATER.

An Unusual Combination System.

The system of heating and ventilation used at the Andrews M. E. Church, on the corner of Richmond and Fulton streets, Brooklyn, N. Y., the plans of which were prepared by architects Kramer & Simonson, Metropolitan Building, New York, is, from its unusual character, one of more than ordinary interest. The plant was installed by S. G. Richards of 1454 Broadway, Brooklyn, N. Y., and designed by W. E. Roys, heating engineer. The heating system provides for an influx of warm fresh air, also a more direct and

arranged by means of dampers of a special construction so that the air may be discharged into the lecture room when desired, the lecture room being on the same floor as the furnace and the pipes to the church running through it. Beside the hot air furnace is placed a No. 5 Pride of Brooklyn steam heater of pipe construction, from which the steam mains run to direct radiators located in different parts of the church. The smoke pipe from both the steam boiler and the hot air furnace connect with an 18-inch pipe made of No. 16 iron, inclosed in the ventilating shaft, which is 30 x 56 inches in size and divided into two flues, each 15 x 56, by

with a radiator of 55 feet of surface and a 1½-inch riser is taken from the end of the main to a radiator having 44 feet of surface in the Epworth League room immediately above. One-inch branches are also taken from this branch main to two class rooms on both the first and second floors, having respectively 22 and 17 feet of surface in the radiators. The other 1½-inch branch main continues this size until connections are taken for two class rooms on both the first and second floors, having respectively 22 and 17 feet of surface in the radiators in them. Then the main ends in a 1½-inch riser feeding four radiators, two in large class rooms on the first



An Unusual Combination System.—Fig. 1.—Showing Heating Apparatus and Piping.

positive system of heating, and a method of exhausting the air from the church to secure ventilation. The fresh air is supplied by a No. 57 Pride of Brooklyn hot air furnace located as shown in Fig. 1, which is a plan of the lecture room and cellar of the church. It was installed in the cellar and supplied with air from out of doors by means of an air duct having inside dimensions 20 x 32 inches. The air when heated is conducted to the lecture room of the church and to the Sunday school room by means of 14 inch tin pipes leading to registers in the floor, there being two registers in the church and in the Sunday school room, as shown in Fig. 1. A plan of the church and Sunday school room is shown in Fig. 2. Fig. 3 shows the gallery of the church and the arrangement of the class rooms and Epworth League room above the primary room. The two pipes which lead to registers in the floor of the church are

means of a partition. In the sides of these ventilating shafts, both in the church and in the Sunday school room, large registers are placed near the floor, and a current of air is drawn from the church through them by means of the heat imparted to the shaft by the sheet iron smoke stack. A Jackson grate in the Epworth League room affords means of heating it when there is no other fire in the church, and also aids in ventilation.

From the top of the steam boiler a 3-inch main is taken, merging into two branches, a 2-inch main running under the Sunday school room, a 1½-inch branch being taken to a radiator of 33 feet of surface in the vestibule. Then the main continues 2 inches in size until it reaches a point under the class rooms, where it separates into two 1½-inch branches, one branch running to the primary school on the first floor, where a 1½-inch connection is made

and second floors, having respectively 33 and 28 feet of surface, and two in smaller rooms having respectively 22 and 17 feet of surface. Immediately beneath the steam main the return pipe for the condensation from each end is run 1 inch in size, receiving the condensation from all the radiators mentioned and merging into a 1½-inch return running over toward the boiler.

The other branch from the 3-inch main from the boiler is a 2½-inch main which extends toward the front of the church, a 2-inch branch being taken to one side of the church where a 1½-inch riser is taken from a coil having 90 feet of surface in the gallery. From this point the main continues full size to another radiator having 133 feet of surface, near a large window in the auditorium. The principal main continues beyond this branch 2 inches in size, a 1½-inch radiator connection being taken to a radiator having 48 feet of surface at one

side of the vestibule. The main makes a right angle turn at this branch toward the side of the church and continues 2 inches in size until a connection is taken

from each of the mains just after they leave the boiler and run to radiators of 32 feet in the vestibules at each side of the Sunday school room. There are two

afforded by large ventilators in the ceilings of both of the larger rooms, and to carry off the heated air when the audience has assembled and the lights

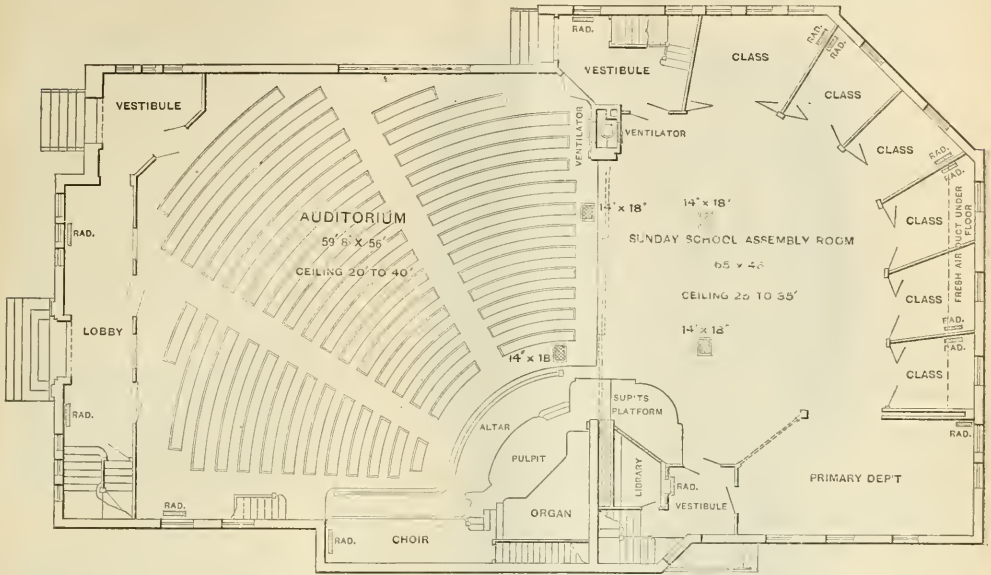


Fig. 2.—Plan of Main Floor.

to a radiator having 24 feet of surface at the other side of the vestibule. After this connection the main is reduced to 1½ inches, running toward the side of the

returns for condensation, each beginning at one of the radiators in the vestibules and running around the side of the church, increasing in size and

are used in the evening. In operation the plant has given excellent satisfaction, the fresh air furnished by the hot air furnace providing an agreeable atmos-

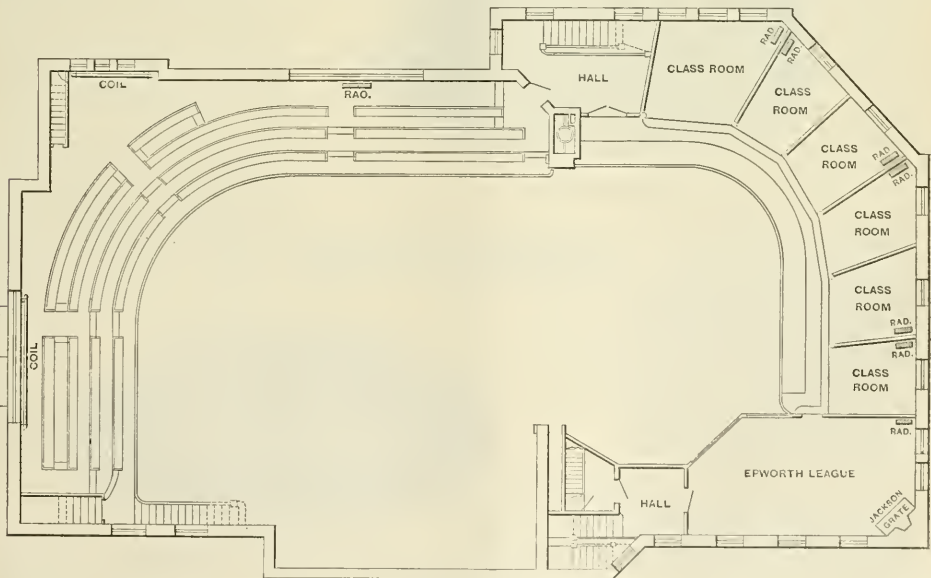


Fig. 3.—Plan of Gallery.

church, where it makes another turn, and a 1½-inch riser is taken to a radiator having 113 feet of surface. It then continues 1½ inches in size to a radiator having 80 feet of surface near the choir. Separate 1½-inch branches are taken

connecting with all the radiators until two 1½-inch branches meet the 1½-inch return from the Sunday school room, where they merge into a 2-inch return which is connected with the boiler.

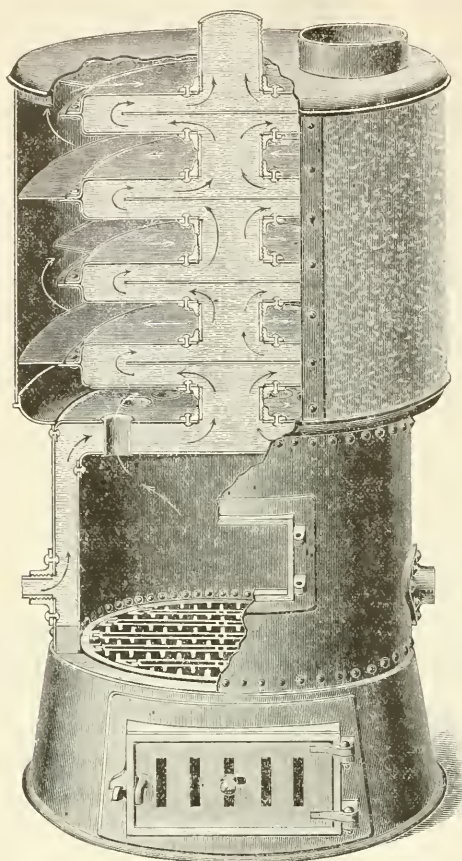
An additional means of ventilation is

there and the radiators carried by the steam boiler affording a heat that is more than is necessary for the early fall and late spring. The ventilating shaft has been very effective in carrying off the colder air in the lower portion of the

church, making it easy for warm air to flow in when the church is being heated by the furnace. A feature of the plant which has been found specially pleasing is its ability to heat the church without

The Lily Steel Hot Water Heater.

Rubel & Co., 77 Lake street, Chicago, have just brought out a new hot water



The Lily Steel Hot Water Heater.—Fig. 1.—Broken View.

overheating by means of the hot air furnace when the weather is mild, and the steam radiators have been found sufficient for the coldest weather.

For those who desire to make further calculations on this heating plant it may be stated that the ceiling of the church proper is 40 feet high in the center and 20 feet on the side walls, while the ceiling of the Sunday school room is 35 feet high in the center and 25 feet high on the side walls, and that the class rooms, lobby and Epworth League rooms extend only two stories in height, the ceiling of each floor being about 9 feet. In addition to the arrangement of the hot air furnace for heating the lecture room, the steam pipes which run through it are used as a heating surface, not being covered. The ceiling of this room is about 9 feet high.

W. H. HARRIS of the Standard Radiator Company of Buffalo, N. Y., visited Manager John Leitch and his assistant, Frank C. Perew, at the New York office, 206 Centre street, this week. Mr. Harris was returning from a short sojourn in Florida.

heater, named the Lily, on which they have applied for a patent. It is here-with illustrated. It is of the vertical type, with horizontal sections, circular in form. The sections are easily con-

nected or disconnected, so that their number may be increased or diminished as desired. The connection is formed by a nipple, which firmly unites the sections and allows the free passage of the heated water.

The broken view of the heater, Fig. 1, enables the distribution of heat and the circulation of the water to be easily

explained. The fire chamber section has a number of circular holes in the top, through which the heat of the fire and products of combustion pass, being directed around the several sections by baffle plates until they reach the chimney connection at the top. The baffle plates, as shown in Fig. 2, are so arranged that they can be turned to any position, enabling the pipe collar to be shifted to any part of the top of the heater. The water circulation is arranged very efficiently. The return pipes discharge cold water into a water jacket around the fire chamber. As the water is heated it passes upward into the first section. Here a square diaphragm is encountered which causes the water to pass to the sides, becoming more highly heated on its passage and finally ascending to the next section, where the same thing occurs, and so on until the flow pipes are reached at the top. A large door in the top casing enables the smoke flues to be easily cleaned.

The manufacturers believe this to be the first sectional hot water heater made entirely of steel. No cast iron parts are used in the heater itself, but only in the grate, door frames, &c. Eleven sizes will be furnished, ranging from the smallest, with a capacity for 600 square feet of radiation, to the largest size, rated at 3000 square feet.

Ventilation.

From SAMUEL HEINS, Roundout, N. Y.—On the subject of ventilation, which is a very important one, I have a few words to say and on the popular errors which should be corrected. There are many readers of *The Metal Worker* who I know are interested in this subject, which I consider one of the most important things of a building, and the people who contemplate building should give their especial attention to the ventilation as well as the plumbing. For the last five years I have made a thorough study of this branch. There are many fairly well educated persons who cannot understand that ventilation does not necessarily mean an open window or a draft of wind, and who would fancy themselves ill provided with pure air even in the best ventilated rooms wherein these objectionable features were not certain evidence to the eye and feeling that some outside air was entering. The two ideas of wind and coolness form the whole of the public knowledge in regard to ventilation. There is also the incidental belief that foul air rises and that there must be

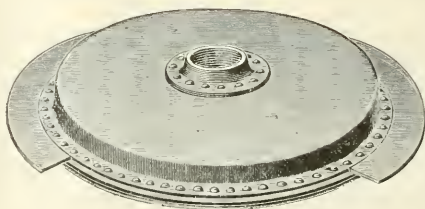


Fig. 2.—One of the Sections with Baffle Plate.

some means provided for letting it out. This idea takes concrete form in the little whirligig seen in so many office windows and in the tendency toward opening windows at the top on general principles. The general belief and tradition is to make a hole somewhere in the upper part of the room and then all foul odors, bad air and other improper things

in the atmosphere will quietly and of their own accord and free will let themselves out. In these crude ideas we have practically all that the public knows or cares about ventilation. In the actual practice of the individual there is no intelligent appreciation of pure air, nor can most people tell whether the air they breathe is fit for respiration. Even people belonging to the educated classes do not use the evidence of their senses in regard to the quality of the air in their houses. It is the duty of sanitary and ventilating engineers to educate the public up to a higher plane as regards ventilation, and in order to do this there must be more general appreciation of the difference between pure air and foul air from their own characteristics rather than from circumstances which have nothing to do with the case. This means, of course, that attention must be given to methods for testing the quality of air in and of itself, without reference to visible means of supplying it or to its available effects upon the surface of the human body. When this educational work has been accomplished the field of the engineer who devotes himself exclusively to ventilation will be the widest of any belonging to the engineering profession.

HEATING NOTES.

S. T. WILLIAMS is again on the engineering staff of Geo. B. Cobb & Co., 96 Centre street, New York.

THE ARMSTRONG MFG. COMPANY, 139 Centre street, New York, report that recently they have been quite busy on orders for their hand pipe cutting tools and adjustable dies for threading pipes. They say that there is a steadily increasing demand for their goods all through the country and that many pipe fitters that use solid dies for shop work consider a set of their adjustable dies indispensable for outside jobbing work.

J. A. GOODRICH of the American Radiator Company, 92 Centre street, New York, is enjoying a well earned vacation in Bermuda.

THE ORIENT RADIATOR, made by T. C. Joy & Co., Titusville, Pa., will be used in the Sachs Building, Twenty-fourth street, New York, 10,000 square feet of surface being required.

DWIGHT SMITH, who has been recently engaged in the plumbing and steam heating business in Penn Yan, N. Y., has returned to Canandaigua.

A WRITER in a Philadelphia paper, in defense of steam, says in answer to the following statement: "The era of steam is passing away." "There is no electric power or heat that does not trace back to a steam boiler except where there is water power. The product of steam—electricity—can never exceed its producing power; this is a common sense principle.

A GAYLY COLORED PICTURE, cleverly imitating a special water color work by Archie Gunn, is the decorative feature of a calendar issued by the J. H. McLain Company, Canton, Ohio. Instead of sending the calendars at the time of the year which is usual for distribution, they have delayed it until the month of March, and we do not doubt they will reap benefit from distributing them at this time, when so many of the January calendars have been lost. The picture shows a young woman in spring-time garb and surrounded by springtime associations, and represents, we are told, "An American Girl Up to Date."

T. C. JOY & CO., Titusville, Pa., are showing at their New York office, 48 Centre street, a sample of their new Zenith radiator, which occupies less space than the ordinary loop radiator and has a large flue surface. They have a new catalogue in course of preparation which will show their different radiators and pictures of some of the prominent buildings in which their radiators have been used.

AS AN INDICATION of the prominent part the manufacture of steam fittings and heating apparatus is playing in the industries of the country, it may be mentioned that according to the last census these products were valued at over \$23,000,000, and there has been a great increase in business since the last census was taken.

THE UNITED STATES HEATER COMPANY have completed their new factory at Detroit, Mich. The machinery was started a few days ago and the entire plant is now in full operation. They have a very complete and well equipped establishment and advise us that they are prepared to fill all orders promptly.

THE CATALOGUES issued by M. Mahony, Troy, N. Y., relating to the Mahony vertical section boiler for steam or hot water heating are attractive publications of convenient size. The leaves are held together by a silk cord at the back instead of being bound in the usual way, and have covers of tinted paper. General and sectional views are shown of both types of boilers and views of the separate sections of each are likewise presented; also a picture of the grate, as well as smaller illustrations of the other boilers made by Mr. Mahony. The cuts are finely executed and finely printed also, and the accompanying text gives a full description of the boilers, which are the same as were recently illustrated in *The Metal Worker*. The steam boiler has a capacity ranging from 1600 to 2700 square feet and the water boiler from 2700 to 4500 square feet.

EXETER RADIATORS are being used in Mr. Jenkins'—of the firm of Jenkins Brothers, valve manufacturers—elegant new residence on Beacon street, Boston.

LOCKWOOD & ADAMS, 69 Centre street, New York, have added to their line of radiation the Napoleon radiator made by Moore Brothers & Co. of Elizabeth, N. J.

JOHN A. SCOLLAY, 74-76 Myrtle avenue, Brooklyn, and 89-91 Centre street, New York, is furnishing a Brooklyn street directory and city guide, on the front of which is a cut of his hot water apparatus, and a notice that he makes a specialty of apparatus for heating residences and greenhouses.

THE ELEVATORS in the public buildings in Philadelphia recently dropped to the cellar at the time of the day when they are most in use. Those who were on them at the time were more or less frightened. The trouble was caused by a section of the 14 inch pipe in connection of the hydraulic lift giving way. The pipe in question had been tested up to 100 pounds and was $\frac{1}{2}$ inch thick. For several hours during the day of the accident it was run at a pressure of 125 pounds, in order to do the work that was ordinarily done by another system. After carrying this pressure for several hours one section split, flooding the cellar and dropping the elevators. On examining the pipe after the accident it was found that throughout

its entire length only a thin film of the metal on the outside had thoroughly fused in the mold. Under the examination the fracture showed that the metal had run together along the entire length of the pipe, but had only fused on the outer side for a very slight thickness, and showed an extended case of "cold shut."

E. W. STRADLING, president of the Stradling Plumbing & Heating Company, Utica, N. Y., was one of the visitors at *The Metal Worker* office this week. Mr. Stradling reports that his company have set a large number of the Royal boilers and is much pleased with their work this winter.

THE UNITED STATES HEATER COMPANY, Detroit, Mich., send out one of their postal travelers showing on the back a general view of their works. The text on the front of the card tells the hard times they had in filling orders last year, because they were in the hands of their friends. Now they are making their own goods and can ship promptly.

THE KEWANEE BOILER COMPANY, 96 Lake street, Chicago, are to move to more commodious quarters at 54 Dearborn street, where they have secured the entire first floor, and will have ample space for the display of a full line of Haxton boilers and Tabasco hot water heaters.

After an interval of comparative quiet the Latin-American portion of this continent has once more relapsed into what seems to be its normal condition of revolution and unrest. Discord between contending factions in Peru has resulted in bloody hostilities at Lima, followed by the establishment of a provisional government consisting of representatives of both parties, a condition of things which cannot long exist. War is threatened between Chili and Argentina, in which Bolivia and Ecuador may be involved. An uprising in opposition to the existing government is reported in Salvador; Venezuela is more or less embroiled with some of the European powers, and the island of Cuba is the scene of a serious revolution, which has paralyzed trade in that country.

United States Consul Germain, at Zurich, is of the opinion that there is an opening for the introduction into Switzerland of American wood working machinery and tools. He writes that if a good agent, speaking French and German, were sent out to visit Swiss manufacturers he would be able to secure large orders. He also thinks that American manufacturers in these lines might find a good market in Germany, England, France, Austria, Hungary and Italy.

Judge Lacombe, in the United States Circuit Court, New York, dissolved last week five injunctions, issued on July 7, 1893, restraining a number of electric light and illuminating companies from infringing a patent for an improvement in electric lights granted to Thomas A. Edison, and controlled by the Edison Electric Light Company and the Edison Electric Illuminating Company of New York. The injunctions were dissolved on the ground that a prior patent, issued to Edison in Canada on November 17, 1879 for 15 years, has expired.

ROOFING AND CORNICE.

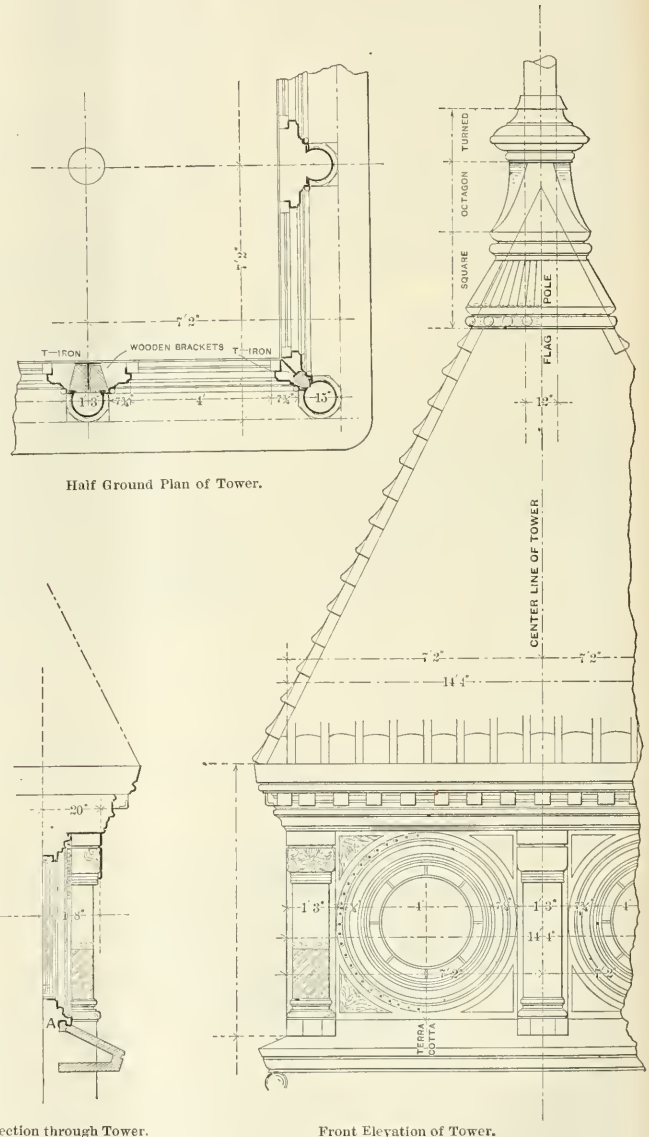
Tower Work in Copper.

BY W. N.

The front elevation, section and ground plan printed in Fig. 1 show the copper work of a tower which was recently executed of 16 ounce cold rolled copper. By referring to the front elevation and section, and to Figs. 2 and 3, it will be seen that the foundation of the copper work is terra cotta. Of particular interest are the methods of fastening the copper work at the building, and for this reason the details of construction have been prepared. T C in Fig. 2 represents the terra cotta cornice, which is L-shaped at the top, as shown at S. Over this L-shaped terra cotta the flashing A is formed, as shown in Fig. 2, and prevents the water from getting inside of the building. This flashing A is placed around the entire tower, the corners and cross seams being soldered water tight. It will be noticed that the flashing extends down the inside, as shown at S, and is slightly bent downward, as shown at B. The corners and cross seams being soldered, no other fastenings are required, as the flashing is bent so as to spring tightly over the terra cotta. The columns shown on the front elevation were then set, and fastened at the bottom by soldering to the copper flashing at the bottom, and fastened at the top by screwing to the wooden brackets which are bolted to the T-irons shown on the ground plan, Fig. 1. The cornice shown on front elevation was then set over the columns and secured by means of copper wire and bands to the iron frame work of the tower. The next step was the setting of the circular windows shown on the front elevation, which, as will be noticed, are inclosed in a square panel. Fig. 3 shows the method of fastening these windows, which is as follows: A represents the terra cotta, B the flashing over the terra cotta and L the drip which is formed to the bottom of the windows and soldered to the flashing B at D. The flange C in Fig. 3 extends around the other three sides of the window, and with copper rivets is riveted to the flange of the columns and cornice. All braces are fastened by means of brass bolts and copper rivets. After all this work was completed the roof was covered with Spanish tile, which were nailed to the porous terra cotta blocks. Over these tiles the copper flag pole base was set, as will be noticed by referring to the front elevation. The lower part of the base is square, the middle part a transition from square to octagon, and the upper part round. V, in Fig. 4, shows a sectional view of the flag pole, and also shows the method of obtaining a water tight joint at the top. V represents the circular molding placed around the top, with a space of 1 to 2 inches from the top of the molding A to the side of the pole. This space is allowed so that in stormy weather, when the pole begins to sway, it will not injure the molding or cause leaks. The funnel or collar B is placed over this molding, the collar having a space of 1 to 2 inches around the top

of the molding A, and is nailed closely in white lead against the pole. To be perfectly sure of a water tight joint, another collar, shown at C, is placed

catch the snow when blowing under. This method of construction around the flag pole also gives ventilation under the tower roof, as shown by the arrows



Tower Work in Copper.—Fig. 1.—Elevation, Plan and Section.

over the funnel B, leaving a space between the two funnels, and is nailed in white lead to the flag pole. A hook edge is bent at A as shown, so as to

in Fig. 4. In many cases where the molding A, Fig. 4, was nailed direct to the flag pole, it has been broken when the flag pole began to sway, causing

leaks; and it is an expensive matter to stop leaks in such a place, owing to the difficulty of reaching the pole.

Slate for Roofing.

In an interesting article discussing the various forms of roof coverings employed since the early history of the

Fair Haven, Vt., in 1839, at Scotch Hill. He manufactured school slabs extensively; in 1847 he commenced the making of roofing slate, and in 1848 he abandoned the school slate trade in favor of that of roofing slate.

The first roof covered with Vermont slate was done by Col. Allanson Allen in 1848, and under these conditions: He was to wait one year for his pay,

In any of the old churchyards can be found gravestones, anywhere from one to 1400 years old, made of slate, and some of the letters seem to keep as fine an edge as when first cut. Then, summing up still further, slate is fire proof, and vegetable matter does not easily attach itself, and hence all water running off it is, as far as the slate is concerned, chemically clean, is free from offensive, smell of decayed wood or moss, as is the case with wooden roofs when old. It requires no paint to keep it water proof as does iron, tin or felt. In truth it is a roof that protects without a constant and continual outlay of money to keep it so that it will protect.

The Roofer.

It is a little too early yet for the roofer to be busy on new buildings, but the time until they are ready should not be wasted. The winter always puts a strain on tin roofs and gutters, with its freezing temperature at night and the heat to which the roof is subjected by the noonday sun. Then the ice in the valleys, gutters and leaders is apt to leave them in a condition for repairs. The paint on a roof is liable to crack or scale from the winter strains, and a fresh coat is the only safeguard against rust and ruin. The roofer knows this, but unless he brings it to the notice of the property owners in his locality it will profit him little. He had better make an inspection of the condition of the roofs of his neighbors and furnish a report free than to sit idle waiting for something to turn up. This will give him an opportunity to talk about the quality of roofing and to impress his hearers with the difference between low priced and good roofing. The starvation price of roofing is the complaint of roofers all through the country, and will be until the roofer has talked good roofing in a way that will let the layman understand the great difference that a cent or two will make in the quality of the material used and the durability of the roof.

This is a good season for some missionary work, and if samples of tin of good size and various qualities are carried along with paper between to prevent rubbing they will lend interest to the conversation. There is a vast difference in the quality of roof paints used, and if some of the tin samples are painted with different grades of paint some benefit will be derived. A set of such samples kept at the shop neatly arranged with tissue paper between them and wrapped in a neat paper will impress the customer that there really is something more in tin and painting than the price, which has too long been the prominent feature of roof talk. Some men spend a good many spare hours and odd minutes in getting just the right wording for a postal card or a small circular which at this season they send to those who own roofs or will be buyers in the future. Roofing well done is not the common labor that its price would

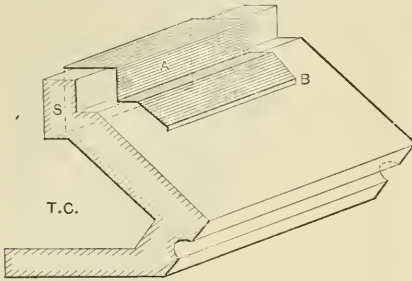


Fig. 2.—Copper Flashing Over Terra Cotta.

world, G. B. Benford presents in a late issue of *Stone* some remarks on slate which are worthy of repetition in this

and if in the mean time the roof should break down from the weight of slate he was to receive no pay, but should pay all damages. The farmer was disappointed, and the roof is good to-day.

A few words in reference to the color of a slate roof may be of some use to those who have not heretofore taken that into consideration when painting their house. When one has a great body of a decided color on a roof, as green, purple, or red is, they should carefully select some shade that will harmonize generally with their roof. That is the reason that some green slate looks brighter, some purple richer and some red more lively, because either knowingly or unknowingly there has been a judicious harmony carried out, by a correct juxtaposition of color. On the other hand a man may paint his house with precisely the same colors as his neighbor, but there is a something about it that he does not understand; it does not look so well as neighbor Brown's. Let him look at his roof. Five times out of six the roof kills the job. Not because anything is amiss in the roof itself, but because of the want of a little artistic taste in color harmony. Neighbor Brown's house was the right color to match the slate. I have just called attention to this because it is one of the peculiarities I have noticed.

A slate roof lends itself very easily to decoration. I have seen mosaic borders and bands of parti-colored slate which were artistic and striking as a method of advertising. No large firm who have an extensive run of slate roofs should fail to put in their name and trade in lighter colored slates than the body of the roof. It stands as long as the roof, because it is a part of it. No iron or wooden signs to blow down, no paint to wash off, an imperishable signboard. Hence to sum up, a slate roof combines the greatest strength with the greatest endurance; slate if good and put on well lasts longer than the proverbial lifetime. The writer knows of a roof that was slated about the year 1680 in one of the royal dockyards of England. About 25 years ago it was found necessary to pull down the building and build a larger one. The greater portion of these slates were placed on the new building. It was also remarked at the time that very little repairs had been done on the roof during the nearly 200 years it had stood.

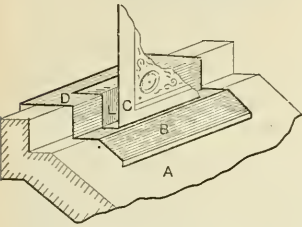


Fig. 3.—Method of Fastening Circular Windows at Bottom.

connection. Among other things he says:

The first slate used in this country, undoubtedly, was brought over from Europe, although it was known that

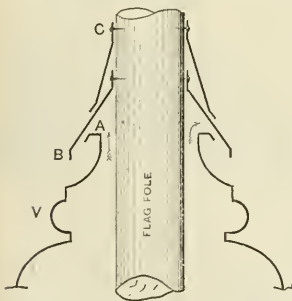


Fig. 4.—Section Showing Water Tight Joint at Flag Pole.

slate could be found in this section of the country, yet it was a long while before any person began to make any use of it. The first quarry had been opened for nearly eight years before any roofing slate was manufactured.

The first quarry in the neighborhood was opened by Col. Allanson Allen of

often suggest, but is a work in which skill and judgment are required, and some effort should be made to raise the

Sheet Metal Ornaments.

We show in the accompanying illustrations specimens of sheet metal work

ladder is made of Canada spruce with oak rounds, and is said to weigh $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds per running foot, and is made



Sheet Metal Ornaments.—Fig. 1.—Leaf Ornament.

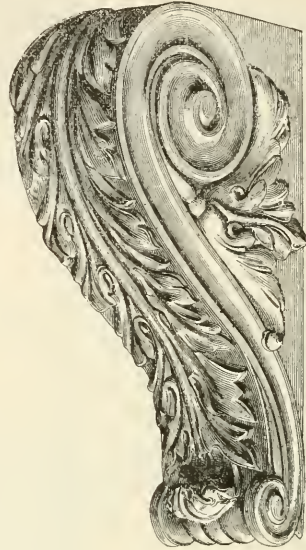


Fig. 2.—Bracket.



Fig. 3.—Ornamental Sheet.

value of good work in the estimation of the buyer and thus lead to its being made more profitable.

made by James White of Brooklyn, N. Y. The examples are taken at random from the extensive assortment manufactured and serve to illustrate some of the work that he does. The leaf ornament, Fig. 1, is deeply stamped and measures $16 \times 16 \times 27$ inches, and the bracket shown in Fig. 2 measures $16 \times 25 \times 8$ inch face. The ornamental sheets of which a section is presented in Fig. 3 are 16 inches wide, while Fig. 4 shows an ornament $16 \times 19 \times \frac{3}{4}$ inches in size. The claim made by Mr. White for this work is that all the designs are original, everything having been carefully modeled by his own artists, being made for some specific purpose and afterward put in stock. Mr. White has also given great care to the manufacture of his cornice trimmings with a view of producing a high grade of stamped work. All the ornaments, of which a very extensive collection is shown in his catalogue, are carried in stock in zinc and are made to order in copper, brass and other metals.

FLASHINGS.

THE OLD JONES BELL FOUNDRY at Troy, N. Y., has been leased by W. H. Squarey and Dr. Billinger of Elizabeth, N. J., who will, it is reported, use it as a plant for the manufacture of tarred roofing paper.

ALLEN ACKERLY & Co., 171 Vine street, Cincinnati, Ohio, send out circulars calling attention to the "everlasting staying qualities" of their Anti-Rust Japans. One of the testimonial letters is a *fac-simile* letter from the War Department speaking in the highest terms of the Anti-Rust Japans, which have been applied on all the metal roofs of the extensive buildings at Fort Thomas military post. Another testimonial is from a brewery engineer who heartily indorses the material.

WATSON H. BLISS & SONS, Hartford, Conn., are manufacturing the Hill extension ladder in New England. The

in lengths from 16 to 50 feet. The extension part runs inside of the ground section and can be readily separated, making two ladders when desired.

WE LEARN from W. J. Burton & Co., Detroit, Mich., that they are enjoying an improved trade in their metal shingles and tools. During the past ten days they have made shipments of their East-lake shingles to Chicago, Toledo, Columbus, Texas, California and various points in Michigan. They also are



Fig. 4.—Stamped Ornament.

having a better business in gutters and conductors.

SCHWING & FRISWELL, Bridgeport, Conn., have completed their large contract at Bedford, N. Y., and also a galvanized iron cornice for the Southport Savings Bank. They have also commenced work on the cornices and bay windows on the Atlantic Hotel.

GLOVER SANFORD'S SONS, Bridgeport, Conn., are raising their store building one story and will cover the front with galvanized iron in imitation of stone.

THE UNITED SALT COMPANY, Cleveland, are just completing the rebuilding and enlarging of their works since their fire. They have a very extensive and complete plant. Their buildings are fire proof, frames and covering being entirely of iron. The Garry Iron & Steel Roofing Company of Cleveland furnished the material and erected the entire plant.

JAMES WHITE, 446-456 Adelphi street, Brooklyn, N. Y., has published a catalogue of sheet metal architectural ornaments in zinc and copper, which is a publication that will be of much interest to the roofing and cornice trades and all those who make use of sheet metal ornaments. The publication is in the form of a portfolio, bound in heavy manilla paper, tied at the back with a string and measures 9½ x 6 inches. Altogether there are 80 odd pages in the book, the sheets being of heavy paper and printed on one side only, giving the whole a very handsome appearance. The publication is not encumbered with unnecessary letter press, the only thing being an announcement at the beginning of terms, discounts, &c. The illustrations cover a most extensive variety of handsome work and will be much appreciated by the trade. Accompanying each cut is a number for ordering and particulars of size and price. In addition to the architectural ornaments there are given at the end illustrations of sheet metal pipes, skylight bars, flashings, skylights, fireproof doors and shutters, ash chutes, &c., while the last page carries an alphabetical index of the contents.

THE KANSAS CITY METAL ROOFING & CORRUGATING COMPANY, Kansas City, Mo., have moved from the Builders' and Traders' Exchange to 416 Delaware street, where they have greatly enlarged facilities for handling their steadily increasing business. The building is well adapted to their business, and they will carry full and complete stocks of all goods handled by them.

WE HAVE RECEIVED a circular from P. H. Lauffman & Co., Limited, Apollo, Pa., referring to their well known specialty, Lauffman's Apollo terne, or leaded sheets, in large sizes, adapted for car roofing, cave troughs, conductor pipe and cornice work. These sheets are made 20 to 36 inches wide and 60 to 120 inches long and from No. 17 to No. 30 gauge. Attention is called to the fact that the sheets are made by oil process and not with acid flux.

BELL'S GALVANIZED WIRE HANG TROUGH HANGERS, which have been on the market for some ten years, are still growing in favor with the trade. The hanger is made of one piece of heavy steel wire galvanized and is so formed as to be a brace and support to the trough and keep it in shape as well as in place. It is constructed so as to admit of its being placed on the trough and fastened, and the trough hung very quickly and with the expense of the least time and labor. The manufacturers refer to their convenience in shipping, being neatly bunched. The hangers are sold chiefly through jobbers, but samples will be sent by applying to the manufacturers, John W. Eell & Co., Mercer, Pa.

GARA, MCGINLEY & Co., 23 South Seventeenth street, Philadelphia, Pa., send out memorandum pads reminding the trade of their business as roof repairers. At the top of each sheet is an original observation or quotation respecting their business. The back car-

ries a request to "Stick this on your 'phone," and the glue, by which the sticking is done, is all ready for moistening.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

JAMES E. CAMP of Bridgeport, Conn., is building a fine residence which will have a plumbing system and will be heated by hot water.

M. J. DALY, Waterbury, Conn., has just taken a large contract in New Haven for the Winchester Repeating Arms Company to construct a fire hydrant system, 1100 feet long, of 8 inch cast iron pipe.

ASHTON & GARRITY, Waterbury, Conn., have the contract for the plumbing in the new residence of Rev. J. H. Duggan.

THE GRISWOLD, RICHMOND & GLOCK COMPANY, Meiden, Conn., are finishing up their big contract for placing the indirect steam heating pipes in the Old People's Home. The contract is a very large one, involving the working up of more than 20,000 pounds of galvanized iron.

GEO. L. MCQUIGG, Flint, Mich., has closed a contract with Father Murphy for a hot water heating system for his residence; also for a hot and cold water plumbing system.

THE Board of Public Works of La Crosse, Wis., will advertise for proposals for heating and ventilating the new school buildings on the plans and specifications of the Sturtevant Company.

THE Board of Supervisors of the Almshouse at Canton, N. Y., are about to expend \$1500 for some system of heating and ventilation to be selected.

THE contract for plumbing the new Merrill Block has been let to Bovett & Noble, Pittsfield, Mass.

CLARK ELLIS & SONS, Milford, Mass., have been awarded the contract for the plumbing at the new school building.

KRUSE & DEWENTER, Indianapolis, Ind., have been awarded the contract to furnish the heating and ventilating apparatus for the new medical college in that city, and for the High School Building in Pendleton.

POSTMASTER DAYTON has received word that the contract for reconstructing the entire plumbing of the New York City Post Office was awarded to Blackburn & DeGraw of New York, the lowest bidders, at \$28,500. The work is to be completed in 90 days from the signing of the formal contract, which will be about April 3, and about April 15 advertisements will be published for arranging the ventilating system of the Post Office.

R. J. O'CROWLEY, Newark, N. J., is doing the plumbing in a house for D. A. Robinson.

THE heating and ventilating apparatus for the new school house at Milford, Mass., will be supplied by the Fuller-Warren Company, Troy, N. Y.

BARLOW BROS., Waterbury, Conn., have commenced work putting in the heating apparatus, which will be run by steam, in the new town hall at Water-town.

CROOK, HORNER & Co. of Baltimore, Md., have been awarded the contract for furnishing the steam heating and power plant for McMahon Hall of the Catholic University at Washington.

J. H. COGAN & Co., Augusta, Maine, have just taken the contract to furnish the residence of Hon. J. H. Manley, Hospital street, with one of the Richmond steam heating systems.

THE CONTRACT for plumbing the new block to be erected by Edison J. Hill, on Hill's avenue, together with contracts for gas piping and steam heat, have been awarded to Lee Bros., Concord, N. H.

BIDS will be received at the Board of Education at 713 Filbert street, Philadelphia, until April 2, for a new boiler in the Mt. Vernon street school, alterations and additions to heating Adamson and Fairview schools, also for heating and ventilating the Curtin school, the addition to the Fair Hill school, the Diston school, and the school at Forty-sixth street, and Woodland avenue.

THE DEPARTMENT OF PUBLIC INSTRUCTION, Brooklyn, N. Y., will receive proposals at the secretary's office, 131 Livingston street, until April 2, for heating and ventilating the new school No. 108. Plans and specifications may be obtained at the office of the chief engineer in Red Hook lane. Bids will be received for steam and the combination of steam and hot water separately.

SEALED PROPOSALS will be received by Howard School Board until noon April 17, 1895, for a system of heating and ventilating Park school, Ligonier street, Sixteenth Ward, Pittsburgh, and old buildings of Bloomfield school, Ella street, Sixteenth Ward. All bids should be addressed to John H. Rhine, Secretary, 317 Edmund street, Pittsburgh, Pa.

JAMES BIRNEY, 2002 West Madison street, Chicago, has the contract for the plumbing and drainage in the flat building of Alfred Halmberg, on Marvin avenue.

HARRIS BROS., 3239 State street, Chicago, are to do the plumbing and drainage in the flat building of John M. Gartside, 4327 Drexel boulevard.

JACOB KIENSLING, 1199 Milwaukee avenue, Chicago, has contracts for the plumbing and drainage in the flat buildings of L. Ludke, 726 Dudley street, and H. R. ether, 699 Davis street.

THOMAS WIXTED, 5553 South Halsted street, Chicago, has the contract for the plumbing and drainage in the residence of J. Elben, 5614 Carpenter street.

TAFFE & LEIBRANDT, 3025 State street, Chicago, have the contract for the plumbing and drainage in the flat building of Charles Leibrandt, 5313 Indiana avenue.

HANLEY & CASSEY, 21 Quincy street, Chicago, have the contract for the plumbing and drainage in the flat building of A. S. Bradley, 5453 Monroe avenue.

PETERS BROS., 1726 North Clark street, Chicago, have the contract for the plumbing and drainage in the flat building of A. Lemmert, 221 Baxter street, Lake View.

GEORGE HAUSLEIN, 1179 North Halsted street, Chicago, is to do the plumbing and drainage in the store and flat building of E. Behm, 805 Clybourn avenue, and in the flat building of E. C. Yerton, 964 Perry street.

CHARLES P. MARTIN, 6406 LaSalle street, Chicago, is to do the plumbing and drainage in the flat building of M. Larson, 6353 Morgan street.

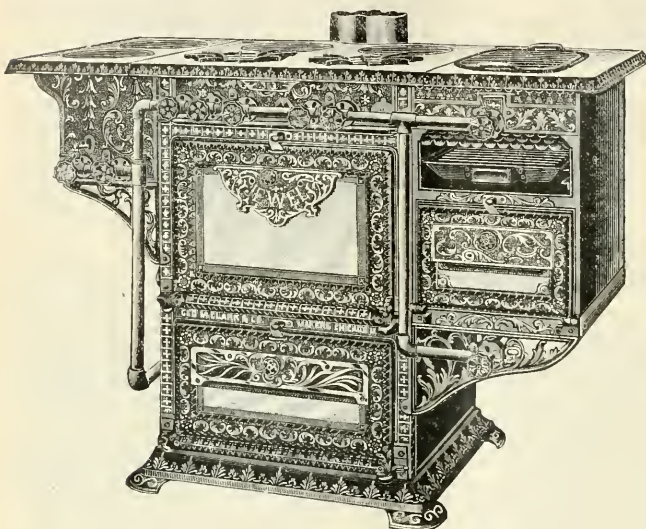
THE RETAIL STORE.

New Jewel Gas Stoves.

George M. Clark & Co. of 149-161 Superior street, Chicago, Ill., have added to their already extensive assortment of gas burning appliances for heating and cooking purposes a new line of Jewel gas ranges. At present

is first class throughout. Another novelty which the company have this season added to their assortment is shown in Fig. 2. This is the Jewel laundry stove of a hight just right for a wash boiler, the top being large and furnished with three removable solid lids. The heat is furnished from three No. 10

side heating attachments. The company refer to these stoves as being useful for many other than laundry purposes. They have also brought out a new line of Junior stoves made in three styles and with six different arrangements of burners, one of which is shown in Fig. 3 of the cuts. These are offered under the name Jewel and are 22 inches wide by 22½ inches deep and 5 inches high.



New Jewel Gas Stoves.—Fig. 1.—Gas Range No. 363.

two styles are being manufactured, one of which is intended for using natural gas and the other for artificial gas. The latter style is known as No. 363, and is represented in general view in Fig. 1 of the accompanying illustrations. It has four burners in the top surface, two lids over the water back and a griddle cake baking plate with reversible burner.

burners directly under the lids referred to. Upon each side is constructed an iron heating device having a No. 10 burner inclosed, these burners being lighted with a pilot light. The flame of the iron heating burners plays against

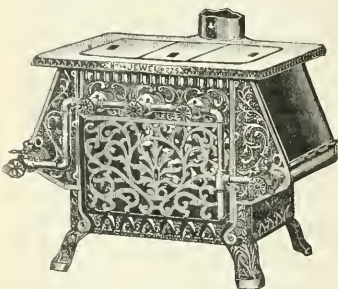


Fig. 2.—Jewel Laundry Stove with Iron Heating Devices.

There is also a broiling chamber, a baking oven and a roasting oven, the base of the latter being made removable. The decorative features are of an effective character and the construction

the slanting top of the plate, giving, it is said, very satisfactory results in operation. Each side has a capacity for three irons, the ledge at the base which holds the irons having openings to receive the points of Mrs. Potts' and similar irons. The Jewel laundry stove is constructed of cast iron throughout, has a top surface 24½ x 18½ inches, a top opening 18 inches wide by 12 inches deep, and an iron heating plate 13½ inches wide by 9½ inches high. The extreme width of the stove shown in Fig. 2, including the iron heating wings, is 29 inches. The manufacturers furnish one style of this stove without the

Guardian Fire Extinguisher.

The accompanying cuts represent a fire extinguisher being put on the market by Randolph & Clowes, Water-



Fig. 1.—Guardian Fire Extinguisher.

bury, Conn. The vessel in which the fluid is held under pressure is a seamless copper shell, in sizes to suit, from 2 to 5 gallons. One of the special features in the extinguisher is the two separate and distinct methods of operation. One of these is an air pressure, which, it is stated, is automatic. The

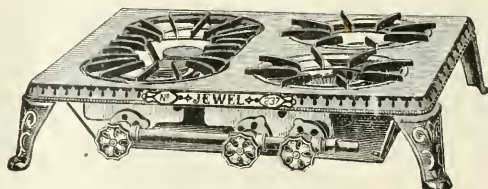


Fig. 3.—Jewel Junior Stove No. 237.

other, it is stated, is a never failing pump, which is auto-mechanical. If from any cause the air pressure should fail to throw the fluid, the pump can be called into use. The discharge pipe or tube, to which the hose is attached, and through which the fluid must pass, is a single, double acting piston pump, of the water packed piston type. It is explained that the mechanism of the pump is such that when the piston or handle of the pump is turned to release the pressure the same movement turns the receiving valve upon its seat once and a half around, so no time is lost. If the internal pressure of the

compressed air is weak, or lost altogether, the necessary force is added by working the piston up and down a stroke of from 6 to 8 inches. The pump immediately fills and force is supplied, it is remarked, to throw a solid stream 40 feet. The pump is so constructed that the receiving valve is kept closed during any period of idleness. It is explained that, while the extinguisher stands ready charged for immediate action, the pump remains perfectly dry, and that should the extinguisher be subjected to a temperature cold enough to freeze the contents of the vessel, the pump will be found in working order, as there is nothing in it to freeze. The point is made that all important mechanical parts of the extinguisher are so arranged that they do not come in contact with the fluid until the extinguisher is in operation; that the tank is so arranged that the compressed air is kept away from the fluid connection by casing it in a compartment by itself, and that the air pressure does not come in contact with any connection of the extinguisher. The manufacturers state that the fluid for extinguishing fires is a combination of chemicals furnished them by one of the most celebrated chemists of the country, that it will not deteriorate or become useless with age, that it will not corrode metal or stain the finest fabric, where the colors are



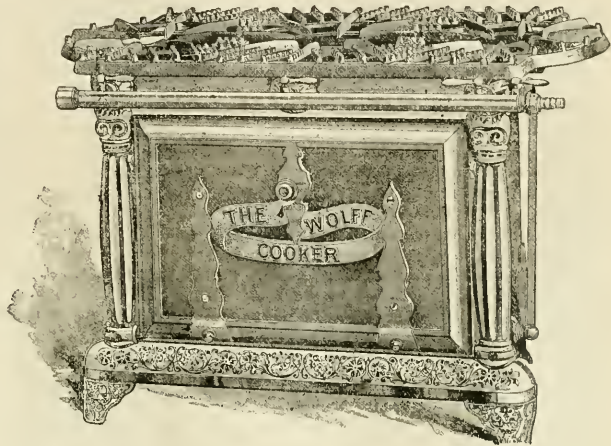
Fig. 2.—Guardian Fire Extinguisher with Gauge.

not fugitive, that the extinguishing qualities are exceptional and that by actual test it has stood a temperature of zero without freezing. The manufacturers furnish the compound in packages, securely packed for shipping, with directions for mixing it. A reliable pressure pump that will not rust or corrode is also furnished. The manufacturers claim that by repeated and expensive experiments they have produced a thoroughly practical and reliable fire extinguisher.

The Wolff Cooker.

A new candidate for favor with dealers in summer goods is the Wolff Cooker, made by the Wolff Gas Radiator Mfg. Company, 164 Franklin street, New York, and which is shown in the accompanying picture. The cooker is new in design and construction, being light in weight so that it may be easily transported, and is compact, so that it is capable of doing a great deal of work and occupying but a small space. There are three burners that may be used for cooking on the top, two for cooking

exclusively on the top, and the third for broiling in the oven as well as cooking on top. This is a new application, and the construction is novel. The top of the range is well perforated to permit the heat of the turners passing up around all vessels which are set upon it, and is so constructed that vessels may be moved around upon it without lifting up. The broiler burner is placed under the center cooking hole and is of an oblong ring construction, the gas burning only on the inner side and under the fine fret work casting, which has projecting pins on the under side.



The Wolff Cooker.

This casting is heated red hot and radiates heat against the food to be cooked. On dropping down the oven door a rack is seen, which is placed in the upper part of the oven on which the broiler sits. Another burner of the same character as the cooking burners on the top of the stove is placed under the center of the oven, and it is said that the cooker is an excellent baker. The oven is 10½ x 16 inches and 10 inches in height. The cooking burners and the burner under the oven are rated to burn 10 feet of gas per hour, the broiler burner burning 12 feet. All the burners are provided with an adjustable air mixer to meet the requirements of gas of different qualities and furnished at different pressures. The castings of the stove are of a fine finish and the body is constructed of Russia iron. All the castings on the front of the stove and the name plate are nickel plated, giving the stove a very attractive appearance.

MEMORANDA.

JEAN L. REED, representing the Rochester Stamping Works and the Robeson Cutlery Company, 141-147 Jones street, Rochester, N. Y., uses a black card, printed in gilt, bearing five verses of praise to the "Rochesters," referring to their line of goods. The card also bears a cut of a copper tea kettle, and allusion is made in the poetry to the many different household goods made of sheet metal by the firm.

IT IS NO UNCOMMON THING for stove dealers to receive curiously worded orders through the mail, but occasionally one is received of such a unique character as to make it more than ordinarily conspicuous. A stove firm doing business in one of the smaller towns in

Maine recently had brought into their office by an out of town stage driver an order reading as follows: "ples geet me A wash bolar Ass cheep Ass you Can A bout 100 25 ore 100 50."

E. M. LAW of West Newton has bought A. H. Lyman's stove store, at Athol, Mass., and will continue the old business and add plumbing. He was formerly in Mr. Lyman's employ.

FRED D. HARRIS and his brother Edward H. Harris have formed a co-partnership and will conduct a tin and repair shop on West Elm street, Oneida,

N. Y. Edward H. Harris has been in the employ of Conley Brothers at their stove store on Madison street. The firm will make a specialty of furnace work.

A. P. BATEMAN, Winchester, Mass., continues to make improvements to the front of his tin shop store. He has built two large show windows.

THE BEARDSLEY MFG COMPANY, Cleveland, Ohio, distribute blotters advertising some of their specialties, which include fire shovels, Economic roasters, grain measures, flour measures, cans, tanks, kegs, &c. Several of the goods are illustrated on the blotters.

HORTON, GILMORE, McWILLIAMS & Co., 172 to 176 Lake street, Chicago, have been appointed exclusive Chicago agents for the Meyers Putz Cream Liquid Metal Polish and the Putz Extract for polishing. These preparations have a worldwide reputation. The first named is not only designed for metals, but also for wood work and leather. The other is for all kinds of metals except silver ware.

L. & I. J. WHITE, Buffalo, N. Y., have opened an office at 48 Centre street, New York, in charge of S. J. White. One of the walls of the office is decorated with a display of edge tools that was exhibited at the Paris Exposition; and the sign that was used over their exhibit is also an attraction in the office. Against a black cloth background in an oak frame of shield design edge tools of various descriptions are shown. They include ice axes, firmer and socket chisels and gouges, draw knives, butchers' cleavers and knives and ship carpenters' tools. Another piece of work on exhibition is a leather splitting knife blade 92 inches long, of superior cast steel and sharpened to a razor edge.

STOVE TRADE NOTES.

The Stove Secretaryship.

The leading members of the stove trade who take an active interest in the affairs of the National Association of Stove Manufacturers are realizing more strongly from day to day the loss sustained in the death of D. M. Thomas, the late secretary. His peculiar fitness for the position was, of course, recognized by the great majority of the members, as shown by the very cordial support which they gave him. Yet Mr. Thomas' warmest supporters now acknowledge that even they fell short of measuring him at his true worth. The best evidence of his superior qualifications is the fact that so far no candidate for the succession has been brought forward who commands any considerable following. Names have been mentioned in connection with the place, but thus far there has been no crystallization of sentiment in favor of any of them. Available men who can satisfactorily fill the position of secretary of the National Association may be found without a very prolonged search, but the great difficulty encountered is in getting a man who can at the same time take up the extremely important work of the Stove Founders' National Defense Association. The two associations are not identical, although largely composed of the same individuals. For special reasons it is desirable that the same person should serve as secretary of both associations. In the case of Mr. Thomas there was no thought of separating the work. He thoroughly comprehended the functions and the special fields of labor of both organizations, and to be elected secretary of one meant for him the secretaryship of the other.

In the discussions and correspondence upon this subject which have so far taken place among the leading members, several names have been suggested of persons who would admirably fill the position of secretary of the National Association. They possess the literary qualifications desirable for the incumbent of this office, and some of them have such attainments of a very high order, which would make them in this respect worthy successors of the deceased secretary. They are also familiar with the commercial side of the stove business, and would by their originality and great mental force assist materially in making the annual conventions interesting and instructive. They would be able to extend the membership of the organization by the persuasive powers with which they are gifted, and their tact would soften an-

tagonisms and prevent misunderstandings. But, thus far, no one in a position to accept the secretaryship has been brought forward who combines with all these qualifications the practical knowledge of stove molding which he must possess in order to successfully conduct the work of the Defense Association.

This part of the secretary's work calls for very peculiar qualifications. The right man in this position can render inestimable service to the stove trade in arranging differences between manufacturers and their workmen, so that serious strikes are prevented. It is true that the other officers of the Defense Association are practical men, who are versed in all the technicalities of stove molding, and are therefore competent to adjust differences that may arise. They by no means abdicate their power in favor of the secretary and relegate to him all their functions. But they have their own business to manage, and cannot travel at a moment's notice to a distant town to hear the fine points of a controversy over the piece price to be allowed a molder for turning out some new shape of a stove part. This is the function of the secretary, and when he appears on the ground he must be so competent to judge the value of the work, and so able to prove the justice of his position, that his fairness will commend itself to both the contending parties. This involves not only the knowledge that comes of years of experience in running a molding shop, but also much hard study in becoming familiar with all classes of work, all varieties of stoves and the peculiarities of the several sections of the country. It is not every manufacturer who can dissect a range made near him with a similar one made 1000 miles away, and fix a fair molding price on every piece of the latter in compliance with all usages which have grown into the trade in the section in which the second range is being turned out. But it would be well if the secretary could do so. He would be a tower of strength to the manufacturers, as he would surely gain the respect and admiration of the workmen, who are intensely jealous of their rights, but are usually quick to acknowledge the justice of a perfectly fair proposition.

The task of selecting a secretary is thus shown to be extremely difficult. Yet the qualifications are not rare in the stove trade. Quite a number of men could be designated any one of whom would make a very capable secretary.

But they are not available, being so situated that the office has no attraction for them. The problem is to find an available man with the necessary qualifications. As the time for the annual convention is approaching this is a question of very great interest to the stove trade, and therefore one which many of our readers would be pleased to have an opportunity to discuss. They may have candidates whose names they desire to bring to the notice of the trade. We shall be glad to print communications on this subject.

Foundry Mixtures for Stove Castings.

The following interesting letter discussing the question of foundry mixtures that appeared in *The Metal Worker* March 16 is sent us by C. A. Meissner of Birmingham, Ala.:

I note a letter in a recent issue in which a foundry manager complains of a certain mixture as not having given good results. He says this mixture was:

30 per cent. No. 2 Foundry, Southern pig.
38 per cent. No. 3 Foundry, Southern pig.
16 per cent. No. 1 Soft, Southern pig.
7 per cent. Jackson County Silvery, 5 per cent. silicon.

With this he used his own scrap, also 30 pounds limestone per charge. He states resultant iron is very dirty and "rusty," that it cannot be skimmed clean, that the rust gets into the molds and makes mean looking castings, and asks opinions of others as to what is the trouble and how to overcome it.

Would you pardon me if I make a little good natured criticism? Our foundry friends make it often a very difficult task for the furnacemen and chemists to help them out of their troubles, from the fact that so often they forget to give them the very data which are absolutely essential to a study of the difficulty. We have here the percentages given, and that is all. There is no intimation as to what section this Southern iron comes from—Virginia, Tennessee or Alabama—which might be a guide to the nature of the iron. There is no analysis of the iron given except the Jackson County, without which we can hardly reach an intelligent conclusion, and he does not state the amount of scrap used nor the nature of the coke, both of which are important items. I do not want to find fault in any way, but merely call the attention of our foundry friends to the need of being a trifle more specific when such matters come up, and I am sure there are plenty of men all over the iron districts who can very quickly give them a clear idea of where the trouble is to be looked for.

As I am reasonably familiar with Southern and Northern irons, permit me to make a rough guess at his trouble and give my reasons for it. I think his mixture is too soft, too high in silicon and probably too high in phosphorus. Every iron he has there is liable to be a high silicon iron, as almost all South-

ern coke irons, except from the brown ore fields, tend to be soft and fluid rather than strong, and even those of the brown ore districts share this property to a large extent.

Take the average Southern iron and analysis will be about as follows:

	Per cent.
No. 2 Foundry, silicon.....	3.25 to 2.60
No. 3 Foundry, silicon.....	3.20 to 3.400
No. 1 Soft, silicon.....	3.75 to 3.75
Phosphorus will average from	0.450 to 0.700

The Jackson County iron will probably run 1 per cent. in phosphorus.

To this he adds his own scrap, which, if made from repeated charges of this mixture, will naturally be high in silicon and phosphorus, and he apparently has no strengthener whatever in his mixture. Of course some of his Southern iron may be a low silicon and phosphorus brown ore iron, in which case the above does not hold altogether good; but even then I should say that he had no need for the Jackson County Silvery, in so far as his Southern No. 1 Soft would be bound to take care of any other Southern iron he could get and give necessary softness and fluidity. Therefore my judgment would be that for his purpose, stoves, he should leave off the Silvery iron and try the mixture without it. If he uses no strong Southern brand—but they are all high silicon and high phosphorus—he could readily buy a strong Southern iron from any of the Southern companies by specifying his needs, for all of them are now going into the matter of analysis most earnestly and are able to meet any such demand, as they all carry strong iron as well as soft iron in their yards.

It may be interesting to note the probable average of this mixture in silicon and phosphorus, based on actual averages of Birmingham iron:

	Silicon. Per cent.	Phosphorus. Per cent.
39 per cent. No. 2 Foundry.....	2.40	0.550
38 per cent. No. 3 Foundry.....	2.25	0.550
16 per cent. No. 1 Soft.....	3.25	0.550
7 per cent. Jackson County Silvery.....	8.00	1.00

This would give a mixture of 2.87 per cent. silicon and 0.581 per cent. phosphorus, which with probably high silicon and phosphorus scrap would be liable to make a mixture entirely too rich for his use and cause his troubles.

From HENRY HEYER, Capital City Sove Works, Columbus, Ohio—In my opinion, the correspondent who wrote *The Metal Worker* March 16 asking for information about foundry mixtures is using too much limestone. I use only from 6 to 10 pounds per ton of iron as a flux and with good results. I use only Frick's coke. I have used several kinds of coke, but find that is the best in the long run. I would furthermore suggest to your correspondent to cut the No. 3 Southern 18 to 20 per cent., and add this 18 to 20 per cent. to No. 2 Southern. I do not put much faith in No. 3 Southern foundry iron for stove plate, although some may have had good results with it. If these suggestions do not help your correspondent I will be glad to give him my mixture if he will apply for it.

A Pennsylvania correspondent, noticing the article on foundry mixtures for stove castings in *The Metal Worker* of March 16, says: "It is difficult to comply with the request made, as there is but little ground to work on. It is

evident that some iron that should not be used is in the mixture, and the proper thing to do would be to get a chemical analysis of each iron used. There are Southern irons which in the pig look first class in every respect, but when used look similar to silver gray and have given our foundrymen considerable trouble. The usual method of getting over the trouble is to drop the iron which causes it out of the mixture altogether. There is no reason why any silver gray iron should be used if the other irons are all right. There is no trouble whatever in getting a first-rate mixture for stove plates with three irons, and a mixture that will run soft, strong and fluid. Such a mixture can be secured with only 3 per cent. of silicon instead of 8 per cent."

A Furnace Association Needed.

Chicago furnacemen state that the furnace trade of that city is in a deplorable condition. Manufacturers and representatives of other manufacturers have been waging relentless war upon each other until prices have been so seriously cut that ruin seems to be inevitable if a change is not speedily made. The prices at which heating contracts have been recently taken are so absurdly low that they almost challenge one's credibility. It would perhaps unduly demoralize business in other sections to quote them. It is enough to say that the whole work of installing a furnace system in an eight-room house is now done for the price of the furnace alone two years since. It is by no means unusual for a conscientious furnaceman to find that the competitor who captured a job was from 20 to 33½ per cent. cheaper. The difference is so great that arguments as to character of work, efficiency of apparatus, safety from fire, &c., have little weight in influencing owners to reject the lowest bidders and take one of the dearer ones.

It follows as a matter of course that these very low prices mean inferior work. The furnaces cannot be properly made, the roughing-in cannot be done with the necessary precautions against danger from fire and all the work must be done hastily and in the most slighting manner. Reductions in cost of material have been considerable within two years, it is true, but they have by no means been so great as to cause the difference prevailing between prices now and then. Furnacemen who expect to do good work confess their utter inability to meet the conditions existing round them. They are of the opinion that the only remedy for this state of affairs is the formation of an association of the manufacturers and manufacturers' representatives in and about Chicago to maintain fair and equitable rates on their furnaces and to control, as far as they can, the reckless bidding on contracts.

It is to the interest of furnace manufacturers to discourage these extremely low prices and not to countenance them by making special concessions at the

solicitation of those contractors who can only secure jobs when they are lower than any one else. It is no credit to a manufacturer to have his name on a furnace forming part of a poor heating system, because the first part of a heating job to be attacked when it fails to give satisfaction is the furnace. A few furnaces of a particular make thrown out in one neighborhood may mean the loss of all patronage in that locality for many years.

An organization of furnacemen would undoubtedly be found of much benefit in correcting disturbances of this character, because men cannot get together and talk over business matters without making an impression on each other in the direction of greater consideration and fairer treatment. Perhaps in no other branch of business to-day is there such a total lack of intercourse and complete disregard of each other as in the furnace trade. Every other line has its national or local organizations which bring the members together at stated periods, but the furnacemen go their several ways as though contact with one another was to be especially avoided. Can they not be brought together?

The Oil Stove Market.

In the old buildings of large cities, which are generally well populated, the heat attending the use of coal for cooking in summer brings a desire for something less heating. Frequently these buildings are not piped for gas and the insurance interferes with the use of gasoline. This is no small market and the oil stove at present seems to monopolize the trade, though patented fuels have had a passing favor. The old stove of the past is barbarous compared to the clean, convenient, easily manipulated, high power oil stove of to-day, which holds its own in the line of progress. The modern oil range is attractive in appearance and is found in the suburban districts in the kitchens of many who are well to do, as it is capable of meeting all the requirements imposed upon it. The kitchen is by no means its only field, for when the heating stove in many shops is dispensed with the oil stove is relied upon to furnish the heat required for a myriad of purposes. The fuel being inexpensive and the heat readily controlled the oil stove in all thickly inhabited districts is destined to play an important part.

H. WATERMAN, manager of the New York house of the Cleveland Foundry Company, 107 Beekman street, is distributing among the trade a catalogue devoted to gas and oil cooking stoves.

FRANK P. GLAZIER of the Glazier Stove Company, Chelsea, Mich., is the assignee of a patent recently granted to A. R. Welsh of that place for certain improvements in oil stoves. The invention consists in the peculiar construction of the base and of the drip pan and its support. The arrangement is such that the ordinary roller base, usually employed where a drip pan is used, is dispensed with. The claim is made that the construction employed is very simple and cheapens the manufacture of such stoves.

Electric Cooking.

English electricians deserve much credit, says the *Despatch*, for the practical way in which they have solved many of the problems arising out of developments in electrical cookery. A well-known writer on the chemistry of cooking has given it as his opinion that the perfect arrangement for an oven would be the radiation of its heat from all sides. This is now done in an electric oven which is having a large sale in London.

The process is said to produce a cooked meat that is absolutely wholesome and extremely appetizing. There is no combustion whatever in the oven, and the food, being cooked in a pure atmosphere, cannot possibly be tainted. The heat is turned on at any part merely by the movement of a switch. It is produced in the oven, and is so conserved that after the oven is once made hot, what is required to carry on the process is little more than that sufficient to make up for slight leakages. The electric oven can be put on the kitchen dresser when needed, and it throws off, practically, neither heat nor smell.

Tabulated lists are provided from which, the weight and description of the joint being given, full instructions are derived as to the time and temperature of the required cooking. Roast mutton takes a temperature of 330° F., beef 340° and veal 350°; and a heat of 370° is needed to give puff pastry its desirable tint and consistency. The comparative coolness of the outside of the oven is a singular feature; as a *chef* remarked at a recent dinner: "You could sit on the oven while you roast inside."

ODD PLATES.

A. WEISKITTEL & SON of Baltimore, Md., are favoring their friends in the trade with a very attractive poster, which shows some of their leading specialties. The central feature of the design, which is lithographed in colors, is a kitchen interior, showing a Fire King cabinet gas range in operation. In the upper right hand corner are vignettes of a two burner hot plate and gas broiler, while in the lower left hand corner is a four-tube gas radiator and an open fire place fitted with a gas log. There is also shown a bird's eye view of the works of the concern named. The make up of the poster is rich and effective, and when displayed in the store of the dealer cannot fail to attract attention.

THE DANVILLE STOVE & MFG. COMPANY, Danville, Pa., are about placing on the market a hot plate for gas in three sizes, a line of cheap furnaces and also a four-hole range in two sizes under the name of the Model Beaver.

A COMMUNICATION was received recently by a manufacturer of gasoline stoves from a consumer who had used a stove of their make for several years, in all seasons, for cooking. It contained the remarkable statement that during the period of the coldest weather we have experienced this winter his fuel bill for cooking for a family of five persons was but 15 cents per week.

THE CARTON FURNACE COMPANY of Utica, N. Y., have just completed their new foundry building, which stands upon the site of the one that was damaged by fire about five weeks ago. The new structure is 54 x 90 feet in size, half of the building being two stories high and fire proof throughout. The structure is

of brick with a truss roof, the doors being fire proof and the shutters covered with tin. The interior is lighted from both sides as well as from a skylight. These dimensions are considerably in excess of those of the old building and give additional molding accommodations for 10 men, making 55 in all. The cupola is 16 x 54 feet and the equipment throughout is of the most modern type. The plant is now running with a force of 125 men. The cost of the rebuilding and improvements is said to reach nearly \$10,000, and to accomplish so much work in such a short space of time is a credit to the enterprise of the management. The work was done under the supervision of John B. Jones, the secretary of the company.

THE A. J. LINDEMANN & HOVERSON COMPANY of Milwaukee, Wis., have recently issued from the press an illustrated price-list of stoves and sheet metal goods which they manufacture. The little volume consists of 64 pages, profusely illustrated, and is bound in colored paper covers with gilt side title. Since the last catalogue was issued the company have nearly doubled their facilities for manufacturing gas and gasoline stoves and their entire line has received many additions as well as improvements. The opening pages are given up to the L. & H. Juniors, shown in a variety of styles and sizes; after which we find the L. & H. single generator cabinet stove; the L. & H. Ideal, shown with and without step, and the L. & H. Process, an illustration of which appeared in these columns not long since. The latter portion of the catalogue considers the L. & H. Grand Cabinet ranges for burning gas; the L. & H. Gem, together with lamp stoves, ovens, oil heaters, torches, elbows, coal hods, stove pipe, &c.

THE PLYMOUTH FOUNDRY COMPANY of Plymouth, Mass., have issued from the press an attractive catalogue of 48 pages illustrating the leading specialties they manufacture. The Plymouth range is made in 70 different styles and sizes and is adapted to meet all reasonable requirements. The catalogue also gives attention to the Crown Royal six-hole range, made in several styles and sizes; the Royal Grand, a first class construction embodying the modern features; the Art Royal, the Prize Royal and the Dexter ranges. The heating stoves are represented by the Royal Grand square parlor heater, the Art Royal sheet iron cylinder surface burner, the Prize Royal, the Plymouth Parlor, the Champion, a nest wood box stove, and the Radiant, a cheap cannon. In the opening pages of the catalogue there is a brief description of Plymouth Rock, the National Monument to the forefathers, Pilgrim Hall and the plant of the Plymouth Foundry Company.

PROBABLY the largest single shipment of oil cook stoves ever made in this country was that recently sent out by the Novelty Mfg. Company of Jackson, Mich. The train consisted of 15 freight cars, the goods being consigned to Butler & Johnson of Syracuse, N. Y. The firm named removed only one car-load of the stoves to their own warehouse, the remainder being reshipped to customers throughout the State. W. B. Johnson of Butler & Johnson stated to a representative of a Syracuse paper that the consignment mentioned would not be sufficient to meet their season's requirements, and that he expected before August 1 to receive at least 25 additional carloads. It is stated

that last season the firm sold something over 15 carloads, and the demand this year is far ahead of that a year ago.

LUTHER & LEDERER, 9-11 D's broomes street, New York, are issuing to the trade their spring catalogue for 1895. It contains 28 pages devoted to gas and oil cooking appliances. Some new sizes have been added to their Enterprise cabinet gas range, some sizes of which are made with gas water back. This is followed by several pages devoted to gas hot plates, the newest being made with two, three and four burners setting up on high feet. They also show a gas water heater to be used in connection with kitchen boilers. These are followed by some tailor and laundry stoves and a plumbers' solder furnace, several pages devoted to oil stoves of different character, and a line of Enterprise lamp stoves. The last pages in the book are devoted to gas stove appliances and equipments.

THE CINCINNATI STEEL RANGE & FURNACE COMPANY of 153 West Fifth street, Cincinnati, Ohio, have recently issued a circular letter to their friends in the trade in which attention is called to the lines of high grade kitchen outfits manufactured by them. These outfits are referred to as embodying the latest improvements and as being adapted for first class hotels, clubs, *cafes*, public and private institutions, &c. The outfits consist of Burton steel ranges, French broilers, steam tables, carving tables, plate warmers, coffee and tea urns, bake ovens, steam dish warmers, jacket kettles, cake griddles, waffle and laundry stoves, copper ware, &c. These goods are constructed in a substantial manner according to the most approved plans and the manufacturers state that they are prepared to furnish complete kitchen outfits and guarantee entire satisfaction in all cases.

J. D. MARVIN, the New York representative of Rathbone, Sard & Co., at 254 Water street, New York, has a "Snap" which he hopes will become popular with the trade. Those who are interested in an up-to-date summer range should stop in to see it.

HUGH DAVIDSON has accepted the position of foreman of the Clinton Foundry of Fuller & Warren Company, at Troy, N. Y., to succeed the late John Thompson, who died recently. Mr. Davidson has for 25 years been foreman of the Empire Foundry, and is in every way competent for his new position.

THE EXCELSIOR STEEL FURNACE COMPANY, manufacturers of furnace fittings, are now occupying the entire building at 38 West Monroe street, Chicago. Their business has grown remarkably during the short time that has elapsed since its establishment. The building occupied consists of six floors in addition to the basement, each 44 x 204 feet, giving over 60,000 square feet according to the usual floor space occupied. But even this is not sufficient to provide the company with all the room needed, and they have been obliged to build galleries on several floors for the purpose of arranging bins to store their enormous stock of furnacemen's supplies. The visitor to the establishment is surprised to find how carefully every cubic foot of space has been utilized, but in looking over the stock he speedily realizes that it is essential in order to successfully conduct a business which comprises so many details. From basement to top floor the most perfect system obtains. In the basement are stored furnaces

cast iron radiators and other heavy goods. Here also are machines for working on heavy steel plate for the various parts of the Excelsior steel furnace. In the rear is a circular saw, constantly occupied in sawing lumber for crating. This lumber is cut exactly to the inch for making the numerous sizes of crates required. It is then elevated to the shipping floor and each size is separately stored in a labeled bin, so that the packers have no cutting or fitting to do in preparing goods for shipment. The upper floors are devoted to light manufacturing and storage. Special trucks or cars have been devised by which large quantities of goods can be easily shifted from one place to another, or removed to the shipping floor by either of the two elevators with which the building is supplied. The company are large consumers of tin plate, constantly carrying thousands of boxes in stock. They sell tin plate as well as furnace fittings, furnaces, steam and hot water radiators, &c.

AN ANNEX of the Chelsea Stove Works, Chelsea, Mich., owned and operated by F. P. Glazier & Co. as a tin shop, was destroyed by fire on Tuesday, together with a large portion of its contents.

ARTICLES of INCORPORATION were recently filed in the office of the Secretary of State at Columbus, Ohio, by the Monroe Stove Company of Mansfield, the capital stock being placed at \$25,000.

WE QUOTE THE FOLLOWING from a letter recently received from a furnace manufacturer: There is no doubt in my mind that more attention in the future will be given to improving and perfecting the hot air system, for the reason that purer air is obtained by it than with steam or hot water heating, unless indirect radiation is resorted to. This, however, is expensive to put in and expensive to run, and it requires a skilled man to handle it to avoid accidents. It is my belief that if first class hot air furnaces of sufficient size were always used instead of small, insufficient, cheap heaters, hot water and steam would be but little employed.

AT A RECENT MEETING of the stockholders of the March Brownback Stove Company at Pottstown, Pa., permission was granted the directors to lease or sell the property of the company at 3626 Powelton avenue, Philadelphia. At this meeting officers and directors were elected, the latter consisting of James Brownback, James Rogers, T. J. March, H. M. Ebert, Franklin March, A. K. Shaner, H. G. Kulp and John H. Towers. The officers elected for the ensuing year are James Brownback, president; James Rogers, vice-president; T. J. March, treasurer, and H. M. Ebert, secretary.

THE WEIR STOVE COMPANY of Weir Village, Mass., have been making some improvements in connection with their plant, and among other things are putting on a new roof to one of their buildings.

IT IS STATED that the Lebanon Stove Company of Lebanon, Pa., recently took an order from a New York concern for 200 gas stoves. If the goods prove satisfactory it is intimated that a large order will result.

L. B. JONES, successor to the Security Gas & Vapor Stove Company, St. Louis, Mo., reports a large demand for their Independent Barbecue broiler, which can be attached to coal ranges

and makes a summer and winter broiler. James & Kirtland, New York, who are Eastern agents for the sale of these broilers, are attaching them to their B. B. ranges, and report that they are giving excellent satisfaction.

THE FRONT RANK STEEL FURNACE COMPANY, St. Louis, are sending out to the trade an illustrated catalogue describing the Mouat hot water heater, for which they are sole agents. This heater is referred to in the catalogue as being the most powerful, economical, durable direct circulator of hot water in the market. The catalogue contains engravings of a number of churches, residences, schoolhouses, &c., which are heated by the Mouat heater. In addition to this the catalogue contains cuts of the heater with sheet iron jacket and heater set in brick work; also side view showing circulation, construction, &c. The catalogue is handsomely printed and will be sent to the trade on application.

HENRY BARTHOLOMAI for nearly ten years past foreman of the foundry of the Enterprise Stove Company, Vincennes, Ind., committed suicide on March 16 while temporarily insane. He had complained of feeling unwell for two weeks or more, but no serious thought was given to it for the reason that he continued to perform his duties as usual. On Saturday morning he left home at 6 o'clock to open the foundry, and was found dead a half hour later. He was 45 years old, had always lived a strictly temperate and upright life. He leaves a wife and seven children, who have the sympathy of the entire community in their sad bereavement.

W. H. MARTIN, Chicago manager for the Peck-Williamson Heating & Ventilating Company, has removed his office and salesroom temporarily to room 1 at 59 Lake street, Chicago. After May 1 he will be permanently located in another part of the same building but with entrance at 41 State street.

THE SANITARY PRESSERS' ASSOCIATION, composed of the workmen in the sanitary potteries at Trenton, N. J., have decided to accept a new wage scale, which reduces the rates paid a year ago from 33 $\frac{1}{2}$ to nearly 60 per cent. This action is the result of a war begun at the end of last summer between the Trenton Potteries Company and the factories outside the sanitary ware syndicate, as a result of which the selling prices were reduced between 50 and 60 per cent. Wares were, for a time, sold at practically less than the cost of manufacture. The reduction accepted by the Trenton workmen will, it is believed, compel the closing of nearly all the Western sanitary potteries. The new wage schedule comes into effect on Monday, when the men will return to work after a long period of idleness.

FORTY POTTERS at the Great Western Pottery, Kokomo, Ind., went on strike on Monday on account of a reduction of 15 per cent. in wages. The company claim that all the Eastern potters have made a cut and that they are compelled to do the same or go out of business. It is expected that the reduction will probably stand.

THE LEAD WORKS of Tatham Bros., 224-226 South Fifth street, Philadelphia, were damaged by fire to the extent of \$3000 on March 22.

SCRAP.

J. H. ROGERS, managing partner of E. Morewood & Co. and the Swansea Tin Plate Company of Wales, arrived at New York last week from England. Mr. Rogers is now visiting the works of the Morewood Company, at Gas City, Ind.

WORK on the new tin plate factory recently located near Frankton, Ind., will, it is announced, be begun at once. The plant will probably be ready for operation about October 1.

N. & G. TAYLOR COMPANY, Philadelphia, contemplate erecting an addition to their works during the coming spring for the production of continuous roofing terne. The company began the manufacture of this material during the past year and are now turning it out with great success. They are also arranging for the production of large tinned sheets, which they expect to able to place on the market at a lower price than that now asked for this material by foreign manufacturers.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., find plenty of work for the recent addition to their plant. Their mills are reported as running to full capacity, turning out about 6000 boxes of finished plate every week.

ON TUESDAY, March 19, in the presence of a large number of townsfolk, the new plant of the Montpelier Steel & Tin Plate Company of Montpelier, Ind., was opened, to the strains of music from a band composed of workers in the mill. The first sheet was rolled by Harry Herbert, the superintendent, from fine open hearth steel, the operation being a complete success. The mill is now running regularly night and day and turning out some 30 tons of black plates of excellent quality daily. The equipment of the works consists of 6 Totten & Hogg hot and 6 cold mills and 12 tinning sets. Two of the mills are not yet completed, but will be in operation shortly. Several grades of tin and terne plates will be produced. The works will employ over 200 hands. The office of the Montpelier Steel & Tin Plate Company is in the Board of Trade Building, Columbus, Ohio.

WE ARE indebted to Bruce & Cook, 190 Water street, New York, for a copy of the second edition of the valuable table of net weights of tin plates, distributed by the firm with their annual calendar, and which was reproduced in *The Metal Worker* of January 12. To the original table has been added in this edition the net weights of wire gauge D plates, and also taggers iron and tin.

THE CONSTRUCTION of the tin plate mill of the Lughlin Nail Company at Martin's Ferry, Ohio, is progressing satisfactorily, and the works will, it is expected, be in operation by June 1. The plant will consist of four hot mills and three cold mills, with accompanying tinning sets. The output of the concern will include charcoal and coke bright plates, as well as roofing terne.

THE PLANT of the Crescent Sheet & Tin Plate Company, at Bessemer avenue, Cleveland, Ohio, will be completed and ready to run about May 1. Buildings and power are provided for six hot mills and ten tinning stacks. The start will be made with four hot mills, two others and the tinning department to be added in the course of the summer.

THE TIN PLATE DEPARTMENT of the Old Dominion Iron & Nail Works Company, Richmond, Va., is now in active operation, turning out a full line of bright and roofing plates. The company contemplate building a four mill black plate plant in the near future.

THE AETNA STANDARD IRON & STEEL COMPANY of Bridgeport, Ohio, expect to have their full complement of eight tin mills in operation by April 1. A large addition which they are making to their tin house equipment will be ready by the middle of that month, by which time the works will possess a materially increased capacity for production.

PREPARATIONS are now being made by the Atlanta Steel & Tin Plate Company, Atlanta, Ind., for an addition of 175 x 80 feet to their main building, in which will be placed three additional tin mills and a bar mill, making their works a six mill plant.

THE report is given out that Sydney W. Bypass and Robert Sirvin, two English capitalists, have been visiting Sharon, Pa., with the object of locating there or elsewhere in that section a large tin plate works, to be erected in the near future.

THE MILLS of the Somerton Tin Plate Works, Brooklyn, N. Y., have been running full, on three shifts, since November last.

THE PLANT of the Beaver Tin Plate Company, Lisbon, Ohio, is fast nearing completion, and is expected to be put in operation by April 10. The company have four tin mills and eight tinning sets. They propose producing both charcoal, coke andterne plates.

THE TIN PLATE PLANT of Marshall Bros. & Co., Philadelphia, is running full, turning out their well-known brand of Penn Treaty, charcoal, coke andterne plates, for which they find an increasing sale. An additional tin mill is in course of erection, which will make a total of five in all.

THE TINNING DEPARTMENT of the American Stamping Company, Brooklyn, N. Y., has been shut down indefinitely.

THE BALTIMORE IRON, STEEL & TIN PLATE COMPANY, Locust Point, Baltimore, Md., advise us that their mill, which has been closed down since October 6, will start up on April 1 after considerable enlargement and improvement.

THE WORKS of the Ellwood Tin Plate Company, Ellwood City, Pa., are now in full operation with four tin mills and eight tinning sets. The company are producing a line of four grades of bright charcoal plates, a brand of coke tin and five brands of roofing plates.

AFTER SEVERAL MONTHS of labor troubles the United States Iron & Tin Plate Mfg. Company, Dammier, Pa., have their works now running to full capacity. They advise us that they are now in a position to regularly supply the trade with their well known brands of bright andterne plates.

THE MORTON TIN PLATE COMPANY, Cambridge, Ohio, have had their three black plate mills in regular operation since January 1, with every success. They have now started their dipping works and have commenced the production of tin andterne plates.

GUMMEY, SPERING & Co., Philadelphia, report an improvement in the demand for their brands of tin andterne plates. Their Pennsylv Old Method roofing plates, they state, are in particularly active demand.

These plates they guarantee to contain 45 pounds of coating to every box of 112 sheets, 20 x 28, which it is claimed is all any plate will hold. Their Alderley roofing plate is increasing in popularity, and the reports concerning their Gumme Anti - Pinhole bright tin plates are most satisfactory. These plates, the firm state, are made in the old-fashioned way from Swedish bars hammered out, and the process of manufacture is so slow that four boxes only per day are turned out. They are largely used for making tinware required to stand long service, such as hotel ware. Phoenix is the name of an imported brand of bright plates sold by the firm, and it is claimed that they are the heaviest coated of any coming to this market. The firm have a good stock of plates of all kinds on hand at their store, there being upward of 1000 tons in sight on their main floor. There is also a stock of about 200 tons of galvanized iron on the same floor.

THE HENDERSON TIN PLATE COMPANY's tinning plant at Norristown, Pa., has been sold out to a new concern, who have commenced business under the name or style of the Filley Tin Plate Company. The new concern enter the market with seven brands ofterne plates and four brands of brights. Theterne brands are Filley Old Style, Filley Roofing, Fidelity, Champion, Union, Victory and Admiral. The brands of charcoal brights are Ridant and Adonis, and of the coke brights Hero and Ella.

THE OHIO RIVER SHEET & TIN PLATE COMPANY, composed principally of former employees of the United States Iron & Tin Plate Mfg. Company at Dammier, Pa., have been organized, and will erect a tin plate plant at Remington Station, on the Pittsburgh, Fort Wayne & Chicago Railroad, near Rochester, Pa. It will be a two-mill plant, and the contract for the erection of one stand of roughing rolls, two 24 x 32 inch hot mills and two 22 x 34 inch cold mills has been placed with the Leebach Foundry & Machine Company, Pittsburgh, Pa. Alexander Sauters is president of the new concern. The Leebach Foundry & Machine Company shipped last week four cold mills to the La Belle Iron Works, Wheeling, W. Va., one Mesta patent pickling machine to the Pennsylvania Tin Plate Company, New Kensington, Pa., and another to the Crescent Sheet & Tin Plate Company, Cleveland, Ohio.

JOHN S. TREGONING of J. S. Tregoning & Son, owners of one of the largest tin plate works in South Wales, announced lately that their plant at Morfa was shut down indefinitely, and would not run again until the condition of things in South Wales was much improved. Messrs. Tregoning's works have been running continuously for more than a generation, and the majority of their work people have grown up in them, some having been in the service of the firm for over 40 years. This action, which has been forced on the firm by the present condition of business, means absolute ruin to many of these people, who are fit for nothing outside the tin plate trade. This is only one of many similar cases in the Welsh tin plate districts, where the distress among this class of labor is very keen and the prospect of relief exceedingly remote.

RECORD MFG. COMPANY, Conneaut, Ohio, a cable to report extreme activity in their tin plate manufacturing department. The company are turning out bright charcoal and coke plates.

A REPORT from Elizabeth, N. J., states that a company, to be known as the Elizabethport Tin Plate Company, have been organized at that place, with a capital of \$150,000, to manufacture tin plate in the plant formerly owned by the Morewood Tin Plate Company, on Staten Island Sound. The property, which covers three acres of ground, has, it is said, been bought from the Morewoods by the new concern, who will increase the capacity of the works. H. Pritchard is named as general manager, and the date given for the beginning of operations is June 1.

THE FRANK KNEELAND MACHINE COMPANY, Pittsburgh, Pa., have completed and shipped all the mills and shearing machinery for the Pennsylvania Tin Plate Company, New Kensington, Pa., and the Crescent Sheet and Tin Plate Company, Cleveland, Ohio, both being four mill plants. They have also recently shipped the shearing and tinning machinery for the new plant of the National Tin Plate Company, Anderson, Ind.

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TRADE REPORT.

The Iron Market.

The official announcement that the price of Connellsville furnace Coke is to be \$1.35 per ton at oven has removed a fruitful topic for guessing. The figure is higher than was generally believed probable and represents an advance of 45 to 50 cents. It is justified on the plea that the advance in wages demands it and that the Coke operators are tired of exhausting their property for the privilege of furnishing their customers material at cost or below it.

The advance will meet with much resistance, since there is a chance that it may not be firmly maintained. Furnacemen will draw upon accumulated stocks until they are exhausted, so that the Coke trade is expected to be pretty dull early in April.

In line with the recent purchases of Pig by a leading Pittsburgh concern is the buying of 10,000 to 15,000 tons of Old Material by the same interest. It is reported that a similar buying movement has taken place in the Mahoning Valley.

Cincinnati reports sales of 20,000 to 25,000 tons of Pig Iron, thus showing a continuance in the activity in that market. In other sections the movement is moderate. The advance in Coke ought to give the Southern furnaces an advantage of about 50¢ a ton over their Northern rivals, whose cost of production will be increased.

Pig Iron.—Reports from New England indicate that there is a somewhat better movement there. In the New York market business is dull and competition is very keen. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$13 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

A very considerable improvement in the demand for Pig Iron is reported from Philadelphia, and in Bessemer an advance of about 25¢ per ton. In non-Bessemer, however, prices are unchanged, although there is less Iron for sale at the inside figures, and in some instances sellers ask a trifling advance, but nearly all the sales were at last week's prices. Some large lots were taken, the volume of business averaging larger than for many months past, the idea among consumers being that if prices do not advance they will certainly not decline. There is a full supply, nevertheless, and holders have not been slow in meeting the demand when the right kind of bids were made. Asking prices are slightly higher and in most cases about as follows for Philadelphia delivery and 20¢ @ 25c less for points within a radius of 100 miles South or West:

According to advices from Chicago, trade in local Coke Iron was hardly as active the past week as it has been, but the volume is still excellent and better inquiries are now in hand. The firmness of the local makers is somewhat resented by large consumers who are approaching the time for renewing contracts, and they are endeavoring to make a break in the line. It is likely that some of these purchases may be deferred in the hope of tiring the manufacturers. Business generally, however, is large enough to make the latter feel quite sure of their ground. They are, therefore, slightly advancing prices instead of marking them down. Business in Southern Coke Iron has been only of moderate dimensions. The attitude of Southern furnacemen is fairly firm, but occasionally a concession is given to secure some specially desirable order. Lake Superior Charcoal has been extremely quiet. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$12.75 to \$13.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	10.00 to 10.25
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch No. 1.....	10.25 to 10.50
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Alabama Car Wheel.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1 Soft.....	10.00 to 10.25
Southern, No. 2 Soft.....	9.75 to 10.00
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.00 to 15.25
Other Ohio Silvery.....	14.25 to 14.50

Sales during the week in the Pittsburgh market have been exceedingly light. The demand for Foundry Irons does not improve and prices are as low as ever. Recent sales of Foundry Iron have been made at prices as low, or lower, as have yet been made. Under existing conditions it is somewhat difficult to quote the market, but for April and May delivery it is fairly represented by the following quotations:

No. 1 Foundry.....	\$10.25 to \$10.50, cash
No. 2 Foundry.....	9.50 to 9.75

Further large sales of Pig Iron have been made in the Cincinnati market during the past week, and at the moment further transactions of importance and magnitude are pending. The aggregate transactions range between 20,000 and 25,000 tons, a prominent feature being the number of small orders placed. The Iron sold covers all sorts and kinds, both Coke and Charcoal, Northern and Southern brands, Mill and Foundry grades. If there is any predominance it is in favor of Mill Iron, one lot of 5000 tons being reported. Most of the transactions cover four to six months in delivery and one lot of 1000 tons Foundry Iron was sold to a local consumer for delivery during the entire year. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal No. 2.....	15.75 to 16.00
Tennessee Charcoal, No. 1.....	12.00 to 12.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50
Bessemer.....	11.65 to 12.00
Standard Southern Car Wheel.....	15.75 to 16.75
Lake Superior Car Wheel and Malleable.....	14.25 to 14.75

The demand for Pig Iron in the St. Louis market does not show any material change from the several preceding weeks. Orders are limited in size but are more numerous. The local consumption shows a steady increase and shipments are being received without any requests to hold them back. Prices are unchanged and No. 2 Foundry is quoted at \$6.50, f.o.b. cars Birmingham. It is difficult to induce consumers to anticipate their wants more than 30 days ahead, so that the volume of business is necessarily limited. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.25 to 9.50
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Metal Market.

Pig Tin.—Speculation has been exceedingly cautious, narrow at that, but mainly "bullish" in a sentimental way. That is to say, some operators have made the most of conditions calculated to raise prices, and, meeting little resistance, accomplished something without adding much to their holdings. In other words, wholesale prices were carried up to the basis of 14¢ net cash for prompt and current month delivery, while the discount on futures has been narrowed as well. The purchases for out of town jobbing account and by consumers have increased somewhat, and indicate that deliveries, although somewhat extensive of late, have been well taken care of, leaving the market in quite good form, as far as position of stocks here is concerned. The market closed very firm with prices at the highest point of the week. Quotations on small lots of Straits from store are virtually unchanged at 14½¢ @ 15¢ per lb.

Copper.—Current report has it that considerable Copper has recently been sold for export. At headquarters the usual lack of knowledge of anything of the sort was displayed. The outside statements place the volume of business at about 2000 tons, but are extremely vague as to price and delivery. It would appear, however, that negotiation with home trade buyers has moderated somewhat and that offers at recent extremely low prices are not duplicated. To this extent the market has improved, but the turn is almost wholly on stock for immediate delivery. Forward deliveries are the subject of negotiation at prices upon which buyers and sellers appear to be considerably apart. In retail business inquiry has been moderate. Prices for small jobbing quantities are unchanged on a basis of 14½¢ for Lake Ingot.

Sheet Copper.—No material improvement is noticeable in the demand for Cornice Copper, which still keeps below the average of the season. Rather better inquiry is, however, regarded as indicating a larger business later in the spring, when building work now being sluggish or in contemplation gets well under way. The outlook is looked on as being decidedly more promising for this class of goods than has been the

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

case for a year or two past. Small lots of Sheet Copper from store are quoted at the net list price of 14¢ $\frac{1}{2}$ lb

Pig Lead.—Business has been less active in this market the past week. Dealings and negotiation served to carry prices higher, however, and stimulative advices from the West gave additional tone. The price for small lots of American Pig from store rules at the same level that it has held for some weeks past, namely, 3¢ $\frac{3}{4}$ @ 3¢ $\frac{1}{2}$ lb.

Spelter.—Outside of ordinary car-load business there has been little doing here, but orders from other quarters have gone out more or less freely and the trade resulting therefrom has served to give the market quite good tone. Prices for small jobbing parcels of good Western brands are quoted at 3¢ $\frac{3}{4}$ @ 4¢ $\frac{1}{2}$ lb.

Sheet Zinc.—There is little change in the market for this material. Demand from consumers is commonplace in the extreme, and prices exhibit no change from the figures quoted from week to week for some time past, namely, 4½¢ @ 4¾¢ $\frac{1}{2}$ lb for 600-lb casks and 5¢ @ 5½¢ for smaller lots.

Antimony.—Business has been rather slow and the market is weakish under the influence of lively competition. Prices for small parcels are quoted at 9½¢ @ 9¢ for Cookson's and 8¢ for Hallett's.

Nickel.—Seller's quotations remain at 35¢ @ 40¢, according to quantity.

Tin Plate.—The market does not show quite as good form as it did a week ago. Large business, particularly in orders for future deliveries, has fallen off somewhat, and spot stock in quantities is only in fair demand. Small business, however, keeps up pretty well, and, in the aggregate, has not made a bad showing. Milder weather has stimulated the demand for Roofing Plates to some extent in this section. Prices have suffered no radical change, but the market is weaker to this extent, that it is easier to buy at figures that sellers mentioned very recently as being too low.

A special London cable dispatch of March 27 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate has been in good demand and buyers have manifested eagerness to place contracts at last week's prices. Makers are reluctant to hook forward orders owing to uncertainty of the wages question. Asking prices average about 2 pence dearer. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 10 14 x 20	9 3	¢	....
Siemens Cokes, 10 14 x 20	9 3	¢	....
Turners, 20 x 28	11 6	¢	2½¢
Charcoals, 10 14 x 20	10 9	¢	13¢

Sheet Iron.—The demand for both Black and Galvanized Sheets continues active, and the fact that buyers are insisting on early shipments indicates that stocks are light. Several of the mills have contracted for their output up to July 1, but others are firmer as to their prices for forward deliveries. Small lots of No. 27 Common Iron are quoted at 2 60¢ @ 2 65¢ from stock and of Galvanized at 75 and 10¢ off.

JACOB BROMBACHER'S SONS, 30 Cliff street, New York, manufacturers of Tinners' Tools and Machines, have moved their office in this city to their Brooklyn factory, 31 Fulton street, near Fulton ferry. Hereafter shipments will be made direct from the warehouse in Brooklyn, where a complete stock will be carried. The sample room is still maintained at 30 Cliff street.

Chicago Report.

Scrap.—Only a moderate trade is in progress. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Malleable Cast.....	5.00	....
Stove Plate (free of burnt).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Flow Steel and Breaking		
Stock.....	4.00	....
No. 2, such as Shovels, Bars,		
&c.....	3.00	....
Old Boilers—whole (Iron).....	3.00	....
(Iron)—cut in single		
Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler		
Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horseshoes.....	7.50	....
Copper Bottoms.....	6	¢
Copper Clips and Heavy.....	7	¢
Heavy Brass.....	6	¢
Light Brass.....	6	¢
Pig Lead.....	23½	¢
Tea Lead.....	2	¢
Zinc.....	23½	¢
Rubber.....	4	¢

Anthracite.—Dullness prevails. Car-load lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8.10	8.35
Sioux City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.05	6.30
Madison, Wis.....	6.25	6.50
Pie. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and	
Missouri River.....	8.85

Trade Notes.

WILLIAM CONNERS, Troy, N. Y., has secured a large order for American Seal Paint, with which the Hotel Champlain at Bluff Point, N. Y., is to be painted. The work to be done by Callanan & Prescott, Keese Valley, N. Y.

THE RECEIVERS of the McCullough Iron Company of Chester, Pa., have petitioned the court to be allowed to borrow \$32,000 with which to erect a galvanizing works.

WE HAVE RECEIVED from the Prince Mfg. Company, 71 Maiden lane, New York, a pamphlet entitled "The Rusting of Iron and Steel: How it May be Prevented and How it is Promoted." This pamphlet describes and mentions the principal characteristics of Prince Brothers' Mineral Brown, formerly called Prince's Metallic Paint. This Paint is made of iron ore which is carefully roasted to change it into peroxide of iron, which is then ground to an impalpable powder and finally mixed with pure linseed oil. It is stated that this paint is particularly applicable to iron and steel surfaces which it is designed to prevent from rusting; that it covers well, adheres with the greatest firmness and altogether forms a very perfect and durable covering.

CONDITION OF THE

Hardware Trade.

THE INDICATIONS OF IMPROVEMENT in the general business situation, which are quite marked in some directions, are regarded by many as the precursors of a general revival of trade and a return to a normal demand. Those who take a comprehensive view of the market are therefore watching it closely with a view of determining the probable course of things and deciding upon the policy which should be pursued, so as to take prompt advantage of any favorable turn. It seems hardly likely that the downward course of prices of raw material and staple goods can be continued much longer, and there are some indications of a strengthening in tone. In the Hardware market there is little new to report. Prices are not materially changed except in the matter of Tacks. There is a perceptible improvement in the demand in many sections, and the South and West are certainly doing a fair, and in some cases a good, business. The Eastern and Middle States apparently are not quite so active, the trade being still very conservative in their purchases. Business is also somewhat spasmodic and uneven. Seasonable goods have a prominent place in nearly all orders. Some manufacturers report business nearly up to normal volume when it is estimated by the quantity of goods handled, but the low prices now current keep down the aggregate in dollars and cents.

Advices from Chicago.—Heavier business is reported by Shelf Hardware jobbers. The packing floors of the local houses now look very much like old times. A few concerns have recently been obliged to employ their packing force at night. The demand covers all kinds of merchandise. The country trade is evidently forcing merchants to buy much more liberally, as orders are almost invariably specified for prompt shipment, showing that goods ordered are immediately needed by consumers. Tinware is in very good demand. Tin Plates are moving more freely, and Roofing Plates have again taken their proper place in shipments from local jobbing houses. Staple goods are moving only moderately and are not contributing their usual bulk to the volume of the business. The Heavy Hardware trade is much better than at any previous time this spring. Wagon makers, blacksmiths and machine shops are purchasing quite freely, and in some cases stocks are being ordered by consumers who think this a good time to make a little preparation for the future.

Notes on Prices.

Wire Nails.—There is a good deal of inquiry and a pretty free movement of Nails, but the market shows the effect of the recent large purchases, many jobbing houses being apparently supplied sufficiently to cover their present requirements. It is expected that with the advance of the season business will increase in volume and that a large trade will be done. The market in the matter of prices is in substantially the same condition as a week ago. Most of the manufacturers are maintaining prices quite firmly and the market has a good tone.

Advices from Chicago.—A very good carload trade is reported by manufact-

urers, with some indication of stocking up among the jobbers, outside of this immediate locality. Orders which are so received are in every case for immediate shipment. The manufacturers hope that this is the forerunner of the usual spring rush, which has now been delayed some three or four weeks owing to the steadiness of the cold weather. Jobbers' prices show no change, but stand at \$1 to \$1.05 for small lots from stock, with a few houses still quoting 95 cents for carload lots. The end of these low prices, however, is very rapidly approaching.

Cnt Nails.—Trade has not been especially active during the past week, but the mills report a good many inquiries and refer to the indications for the opening season as being on the whole encouraging. Small lots from store at New York are quoted at 85 to 90 cents.

Advices from Chicago.—Manufacturers have recently enjoyed an excellent trade in carload lots, but have as yet seen no disposition among their customers to lay in stocks. Small lots from stock stand at \$1.

Barb Wire.—Manufacturers continue to take a hopeful view of the outlook and report inquiries and orders good for the season, considering the prevailing conditions. Prices are about as they have been for the past week or two. The disposition of some of the jobbing houses to shade manufacturers' quotations is having some effect on the market.

Advices from Chicago.—The large business noted last week has maintained its volume, but it did not develop into the great activity expected. This was probably due to less favorable weather for a few days, which, however, has again changed for the better. Business now in progress is well up to the capacity of the mills, but at this time of the year manufacturers are accustomed to being rushed. It is expected that within the coming month a heavier trade will surely be felt. Small lots from stock are quoted in a regular way at \$1.05 and \$2. Some of the jobbers, however, continue to cut manufacturers' prices 5 cents per 100 pounds, but they say the situation is such that these extreme prices are likely to be withdrawn any day.

Tacks.—Revised list prices on Tacks, to which reference was made in our last issue, have been announced by the Atlas Tack Corporation and other leading manufacturers. In the new list prices are revised throughout and inequalities in the old list corrected. With the exception of a few unimportant corrections made in 1889, there has been, we believe, no revision of the Hardware Tack price-list since 1882. Since that date numerous new styles of packing have come into vogue, and as a consequence numerous price-lists to correspond. One object of the manufacturers in adopting this new list, which will be known as the list of March 25, 1895, is to consolidate these lists in one, with the correction of inequalities, so as to make it represent the present costs of the goods. Under the former list the smaller sizes were relatively too low and the new list prices are accordingly increased. From the discount sheet which is given below it will be seen that the list is relatively a high one, the manufacturers having adopted this policy in accordance with the request of the various jobbers' associations for high lists and long discounts. The new list has been adopted by nearly all the

manufacturers in the country, and it is hoped that it will be found to give satisfaction to all interests and remain for a long time without change. The few manufacturers who did not participate in the preparation of the list will undoubtedly adopt it, so that it will be uniformly used. The discounts applying to the new list are as follows, with an additional 33½ per cent. and 2 per cent. for cash, with the usual deliveries:

	Discount. Per cent.
Carpet Tacks.†	
American.....	66½
Steel.....	66½
Swedes, S. S.....	66½
" Lanc.....	62½
Leathered.....	33½
Steel—gross and ½ gross packages..	46½
American Cut Tacks.†	62½
Swedish Iron Tacks.....	
S. S.....	62½
Lanc.....	57½
Upholsterers' Tacks.†	
S. S.....	66½
Lanc.....	62½
Gunp Tacks.†	
Lanc.....	66½
Lanc.....	62½
Lace Tacks.†	
S. S.....	62½
Lanc.....	57½
Trimmers' Tacks.†	
S. S.....	55
Lanc.....	50
Looking Glass Tacks.....	33½
Picture Frame Points.....	33½
Basket Tacks.....	62½
Berry Box Tacks.....	62½
Trunk Tacks.†	
S. S.....	66½
Lanc.....	62½
Miners' Tacks, S. S.....	60½
Bill Posters' and Railroad Tacks.†	
S. S.....	66½
Lanc.....	62½
Brush Tacks and Nails.....	
S. S.....	55
Lanc.....	50
Hungarian Nails.....	57½
Common and Patent Brads.....	50
Finishing Nails.....	57½
Trunk Nails.†	57½
Clout Nails.†	57½
Basket Nails.†	50
Chair Nails.....	45
Cut Box Nails.....	45
Plymouth Rock Tacks.....	66½
Miniature Keg Tacks.....	66½

† Blued, Bright, Tinned or Coppered.

Above discounts are for straight weight goods. Additional discounts will be given on Star ** weights of 5 per cent., standard *** weights of 10 and 5 per cent. and special *** weights of 10 and 10 per cent. beyond straight weight discounts.

Freight will be prepaid or the actual cost of delivery will be allowed on goods in quantities of 300 pounds or more to Boston, New York, Philadelphia, Baltimore, and to the principal points on or east of the Missouri River.

Milk Can.—The Porcelain Lined Milk Delivery Can put on the market by Stuart & Peterson Company, Burlington, N. J., and illustrated in our last issue, is sold at 50 cents for the 1-quart size, and 70 cents for the 2-quart size, subject to a discount to the trade of 50 per cent.

Roaster or Oven.—Leach Roaster & Baker Company, Paxton, Ill., are manufacturing the Champion Roaster or Oven which was illustrated in *The Metal Worker* of the 29d inst. This article is sold from the following list, which is subject to a discount of 33½ per cent. to the trade:

No.	
1.....	\$1.50
2.....	2.20
3.....	2.65

Glass.—The sub-committee appointed by the Window Glass manufacturers to inquire into the cost of imported Glass in the East has verified the statement which has been made that domestic

Glass has been sold below the price of the imported article. The difference in price is stated to average about 15 per cent., and has had the effect, it is believed, of keeping something like 1,000,000 additional boxes of foreign Glass out of the market. While the low price of American Glass has kept so large a quantity of foreign Glass out of the country, it has done so at the expense of the home manufacturers, which in some cases has been so sorely felt that better prices are deemed a necessity. It is considered probable that when prices take an upward turn the price of imported Glass will be the basis governing the selling price of American Glass. It is not improbable that the cost of American Glass, at least of some sizes, will be increased by the demands of the workers or by concessions in wages on the part of manufacturers, or by both, before the factories start in the fall. The outlook indicates no scarcity of Glass for the spring and summer trade, as it is estimated that there are from 1,200,000 to 1,800,000 boxes of Glass in the hands of the manufacturers, buyers and large consumers. There is no change in the condition of trade, the demand being limited and for immediate consumption only, while prices are in an unsettled condition.

Old Metals.—The demand continues fair, but the supply of most kinds of Old Metals is amply sufficient to prevent any radical change in prices. In Iron there is a good demand for Cast and Scrap. Quotations in a general way are unchanged, the following representing dealers' purchasing rates for moderate lots, New York delivery:

Heavy Copper.....	¢ 7 ½
Light and Tinned Copper.....	¢ 6 ¾
Heavy Brass.....	¢ 4 ¾
Light Brass.....	¢ 3 ¾
Lead.....	¢ 2 ¾
Tea Lead.....	¢ 2 ¾
Zinc.....	¢ 2 ¾
No. 1 Pewter.....	¢ 1 9 ½
No. 2 Pewter.....	¢ 1 5 ½
Wrought Scrap Iron.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross ton..... 7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rags, Paper, &c.—The demand for Paper Scrap is fair but somewhat irregular. Dealers' purchasing prices have not advanced any, quotations being as follows for this city:

No. 1 White Rags.....	¢ 3 ¼
No. 2 White Rags.....	¢ 2 ¾
Mixed Rags.....	¢ 1 ¾
Blues and Sds.....	¢ 1 ¾
Hard Sized White Shavings.....	¢ 2 ¾
No. 1 White Book Shavings.....	¢ 1 ¾
No. 2 White Book Shavings.....	¢ 1 ¾
Light Book Shavings.....	¢ 1 ¾
No. 1 Mixed Shavings.....	¢ 1 ¾
No. 2 Mixed Shavings.....	¢ 1 ¾
No. 1 Printed Books.....	¢ 1 ¾
Ordinary Mixed Books.....	¢ 1 ¾
Newspapers.....	¢ 1 ¾
No. 1 Manila Paper.....	¢ 1 ¾
No. 2 Manila Paper.....	¢ 1 ¾
Bogus Paper.....	¢ 1 ¾
Common Paper.....	¢ 1 ¾
Straw Clips.....	¢ 1 ¾
Binders' Clippings.....	¢ 1 ¾
Jute Butts.....	¢ 1 ¾
No. 1 Jute Bagging.....	¢ 1 ¾
Mixed Bagging.....	¢ 1 ¾
No. 2 Bagging.....	¢ 1 ¾
Hemp Twine.....	¢ 1 ¾
Manila Rope.....	¢ 1 ¾
Jute Rope.....	¢ 1 ¾
Mixed Rope.....	¢ 1 ¾

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, ¢.....	\$0.03½ @ .04
Rubber Shoes, carloads, delivered at factory, ¢.....	.05½
Rubber Shoes, less than carloads, ¢.....	.04½
White Winger Rolls, ¢.....	.04
White Syringes, ¢.....	.03½

Metal and Miscellaneous Prices.

CHICAGO, MARCH 28, 1895.

Tin—

Various sizes 16 1/2 @ 3 1/2

Imported Tin Plates—

Charcoal Plates—Bright.
Guaranteed Plates command special prices, according to quality.

	Per box.
IO, 10 x 14.....	\$8.50
IX, 10 x 12.....	8.60
IX, 10 x 10.....	8.60
IX, 10 x 8.....	8.60
IX, 10 x 6.....	8.60
IX, 10 x 4.....	8.60
IX, 10 x 2.....	8.60
IX, 10 x 1.....	8.60
IX, 10 x 1/2.....	8.60
IX, 10 x 1/4.....	8.60
IX, 10 x 1/8.....	8.60
IX, 10 x 1/16.....	8.60
IX, 10 x 1/32.....	8.60
IX, 10 x 1/64.....	8.60
IX, 10 x 1/128.....	8.60
IX, 10 x 1/256.....	8.60
IX, 10 x 1/512.....	8.60
IX, 10 x 1/1024.....	8.60
IX, 10 x 1/2048.....	8.60
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THE METAL WORKER.

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The Close of the Trade School Season.

With the advent of spring comes the termination of the winter's work of the various trade schools in this section of the country. During the last week of March the majority of these institutions habitually wind up their season and award certificates to those pupils who have earned them. For this reason considerable space in this issue is claimed by trade school matters. It is encouraging to find that the past season's experience of all these schools has been satisfactory, despite the fact that the building trades, to which, more than to any other industry, they cater, have been suffering under an unusual strain of depression. The growth of the trade school movement in the United States has been comparatively slow, but it is gaining ground from year to year. It is to be hoped that by next winter some further accessions will be made to the ranks of these most valuable institutions.

The List of American Tin Plate Works.

In the present issue is printed our regular quarterly list of American tin and black plate works, with the names of the brands of tin andterne plates made by each. This compilation is the most complete and accurate list of the domestic works yet published. It will be particularly interesting and valuable to the trade on account of the details given therein as to the number of black plate mills in existence, in operation and building at the close of March. The figures presented, which were furnished by the manufacturers themselves, demonstrate very clearly the remarkable growth in importance of the American tin plate manufacturing industry even during the past half year. We take this opportunity to tender our thanks to the representatives of the various firms named on the list for their prompt-

ness and courtesy in supplying the information from which the list has been compiled.

The Retail Merchant and Irregular Competition.

In many parts of the country retail merchants are suffering keenly from irregular competition. Those who are located in large cities find the great department stores cutting into their trade, while those who are conducting business in small towns are subjected to inroads of peddlers or find their patrons ordering goods by mail or express from large farmers' supply stores. Thus all classes of merchants, whether in city or country, have their special grievance. These troubles are not new, but some of them are of long standing. During these times, however, with the general curtailment of trade and the diminished profits realized, the burden of such competition becomes more grievous than ever. It is extremely discouraging for a merchant to lay in a carefully assorted stock, calculated to meet all possible requirements of the community in his line, and discover that his patrons merely buy from him what they are absolutely unable to get from a department store or a farmers' supply house. The local merchant is then used merely as a convenience or a makeshift, and the long years in which he has acquired his knowledge of the business and the ability to appreciate what the consumers of hardware want, count for nothing. The bargain counter in a department store wins the customer, even if he learns very soon afterward that the temptingly low price meant a correspondingly poor article.

Way to Meet Competition.

There is no remedy of a general character which can be devised to meet and correct these unsatisfactory conditions. Each retail merchant is obliged to contrive some method of his own to counteract the invasion of his trade by his irregular competitors. The mercantile field is open to everybody and in no possible way could restrictive measures be introduced. The owners of a department store, the managers of a supply house and the backers of peddlers' wagons are violating no law when they merely compete with hardware merchants and capture some of their trade. Violent denunciation of such methods will do no good. Other means must be tried if a merchant is desirous of holding his customers. The main thing to do is to acquaint a neighborhood as thoroughly as possible with the character of the articles carried in stock and

their prices. It is too often the case that a retail merchant will insert a small card in his local newspaper, giving his name and business with some catch phrase, such as "Large stock at low prices," and permit the advertisement to stand unchanged week after week. He will then make no further effort to attract the attention of the public, contenting himself with the thought that they know where his store is and what he keeps. His customers never know his prices unless they ask specifically the value of each article. Their ignorance keeps them in good condition to be influenced by the quotations ever before their eyes in the advertisements of department stores or in the circulars of supply houses.

Educate the Buyer.

A merchant should expend a reasonable amount in educating his customers. He should frequently send them circulars calling attention to some special articles, each time giving prices and brief points as to their merits. When he gets in seasonable goods he should let his neighbors know it. If he accepts the agency for a new line of goods he should stir up the town. If he receives something particularly nice he should feel so enthusiastic over it that he would be unable to restrain himself from letting every man, woman and child in his territory know the important fact, together with the very low price at which it could be obtained from him. He should regard it as a reflection on his shrewdness as a merchant if a canvasser or peddler should be able to sell any of his regular customers an article of an inferior quality or at a higher price than he stands ready to furnish. If he has any reason to suspect that his particular bailiwick is likely to be invaded by rival sellers of any article he should immediately advise his customers of the bargains in the same line to be found in his store. As vigilance is the price of liberty, so is watchfulness the salvation of the retail merchant.

Arrangements for the establishment of the Franklin Trade School in Boston move slowly. It is said, however, that the obstacles which have hitherto stood in the way of the project are being gradually removed under the pressure of public sentiment, which manifestly favors the scheme of a trade school pure and simple as distinct from a manual training or technical institution. Such a school would be of incalculable benefit to the native youth, not of Boston alone, but of the whole of the New England States, for which it would, with the ample pecuniary resources at its command, be a splendid center of trade training.

THE LETTER BOX.

Joints in Greenhouse Piping.

From Y., *Rondout, N. Y.*—I have been given the contract for heating a large conservatory, which will take 2000 feet of 4 inch cast iron pipe; and I would like to know something of the method of making the connections in it.

Note.—It is probable that some of our practical readers can give this correspondent some valuable suggestions. Rust joints in cast iron pipe used for greenhouse heating are by many considered most serviceable. These joints are made with what are generally called iron filings; but these should not be too fine, or resemble dirt. It is better to have the iron filings coarse, or more correctly speaking, machine cuttings. Those best adapted for these joints are from castings made from soft, strong iron, and entirely free from grease of any character. They should be prepared for use by being wet down with water that is slightly salt. Too much salt is objectionable, and the resulting expansion may break the hub end of the pipe. In order to prevent these filings from getting into the inside of the pipe, the bottom of the joint should be packed with oakum and the filings packed on top of it. Another method is to use red lead on top of the oakum applied in several layers, first oakum and then red lead. The success and durability of this joint depends on the quality of the red lead used, and the care with which the joint is made. Sometimes Portland cement is used instead of the red lead between the layers of oakum.

A Mismanaged Furnace.

From C. H., *Mansfield, Ohio.*—I have a hot air furnace which is causing me some trouble, and I hope that some of the readers of *The Metal Worker* can help me solve the problem. Last fall I placed a hot air furnace in a house that was then in course of erection. There are four 10 inch, three 9-inch and three 8 inch pipes on the furnace, all covered with asbestos paper and having an average length of about 15 feet, with a pitch of about 25 inches. The top of the furnace is depressed in the center, with a pitch of about 8 inches. The cold air box is 16 x 33 inches and leads from the north, entering the casing of the furnace at the bottom. A cold air pit could not be used, as there are several springs in the bottom of the cellar. When I set the furnace there was only one turn in the cold air box; but this did not suit the owner, who had it changed without my knowledge, so that now it has five turns in it. The chimney is at the center of the house, having one 8 x 12 flue for the furnace and three flues for grates,

and runs out at the peak of the roof. The smoke pipe from the furnace enters the flue at the bottom, with no space between this opening, as all flues should have. When the furnace is run with the drafts open it nearly roasts the people out of the house; but as soon as they close the draft and open the check the fire dies down, and nearly every morning is out and the house cold. Several kinds of coal have been used with the same result. The furnace is large enough for the house, for with the drafts open it will heat the house in a very short time without a particle of the fire pot becoming red hot. I have set 40 furnaces during the year and this is the only one that has given me any trouble. I do not know how to overcome the trouble. There is good draft, plenty of cold air, good elevation to pipes, furnace of ample capacity, three grates in the house, and everything done according to my best knowledge, which has proven successful in all other cases but this. I did not have to make a single change in any of my other furnaces and this winter has tried the best of them. My customer says he will not pay for the work until the furnace works satisfactorily. Before he changed the cold air box the painters that worked in the house before it was occupied only needed to fire it twice a day; now it is fired from five to eight times. Am I still liable for the furnace when the chimney stops at the smoke pipe and the cold air box has been changed? Can I be forced to take the furnace out at my own expense? If I change the cold air box as it originally was and put a stack on the furnace flue and secure successful operation, can I hold him for the extra expense?

Note.—We trust that our readers will endeavor to help this correspondent. It seems to be a clear case of mismanagement of the furnace. If the painters, who had no interest in it, could keep fire by attending the fire twice a day the method they followed will produce the same result again. It would seem that the fire is checked too much, and that more judgment is needed in checking it. The character of the contract will decide some of the questions asked. If the contract was to heat the house, it seems that it has been fulfilled. If the contract was to heat the house satisfactorily, which is a dangerous and unbusinesslike word to use, it will be cheaper to bear some expense than to enter a lawsuit. A decision has been gained in one court, however, where it was held that the word "satisfaction" could not be made to cover unreasonable demands.

Paste for Asbestos Paper.

From J. CALLAGHAN & SONS, *Cleveland, Ohio.*—We notice the letters in *The Metal Worker* from "W. H.," Indiana, Pa., and "J. R. L.," Binghamton, N. Y., on paste for asbestos paper,

and wish to thank them through the Letter Box of *The Metal Worker* for answering our inquiry. We are under the impression, however, that time can be saved in putting on paper on hot air pipes by using a paste of some sort. We have tried the recipes given us by "W. H." and "J. R. L.," but found it to work slowly, so we are sure that a good paste would be an advantage. If we obtain a paste recipe through *The Metal Worker* we will be very thankful.

Is Trap Ventilation Necessary?

From SWIPED JOINT.—Notwithstanding the almost universal opinion of English writers on this subject, I must agree with "A. B. K.," whose letter appears in *The Metal Worker*, March 30, that there is no necessity, except to prevent siphonage. It may shock many very eminent sanitary engineers on this side of the Atlantic, and many intelligent plumbers, too, but after a good many years' experience and observation I am willing to go on record as opposed to it. My observation is that these vent connections sooner or later become broken or loose, in which condition they defeat the object of the trap. As no water is supposed to pass through them they may be loose or broken for years before discovery. Some architects have the idea that if a trap is back vented sewer gas cannot pass the trap, no matter if the water seal has evaporated, and for such reason specify vents. If this was true and could be depended on then I would do away with the trap entirely and back air and vent every waste pipe, for if we can secure a positive down draft through our fixture waste there remains nothing to trap against.

Holes in Copper Tank Lining.

From R. & R., *Hope Valley, R. I.*—Will *The Metal Worker* please inform us what is the cause of a copper tank lining becoming honeycombed or full of innumerable little pits which when very slightly pressed with a pointed tool will make a hole? We were called a few days ago to repair a copper tank, which we found in this condition. The lining is of 16 ounce soft copper, tinned on one side, which has been in use 20 years. The water is rain water taken from a cedar shingled roof. The gutters and conductor are made of tin. In very dry weather water is pumped into the tank from a well. This, however, very seldom occurs, as the tank holds about 22 barrels, which is generally sufficient for the demands made upon it. The tank supplies a copper range boiler and is located about 3 feet above it. The lead pipe leading from the tank to the boiler is 6 feet in length and 3/4 inch in diameter. The relief pipe from the boiler drops into the tank. The water in the tank never gets warm, as the steam or vent pipe from the boiler very seldom overflows. This is a new experience to us; and we would like to know if this condition is often found with copper lined tanks. We

should also like to know how long a 14 or 16 ounce copper lining will last.

Note.—This is not the first time that a complaint of this nature has been brought to our notice. Several years ago a correspondent wrote to us about the trouble he had experienced with the pitting and perforation of copper sheets, and within a week or two a second letter came from another part of the country speaking of the same difficulty. We looked into the matter carefully at the time, and interviewed copper manufacturers and others, without, however, receiving any very satisfactory explanation. It has been suggested that the trouble is caused by the sheets of copper not being thoroughly clean before they were tinned. Little particles of oxide remaining on the sheets are tinned over and start a corrosion, which eventually results in the small holes mentioned. We should be glad to hear from our readers on this subject.

The Quality of Tin Roofs.

From a letter recently received from N. & G. Taylor Company, Philadelphia, we make the following interesting extracts:

The letters appearing in your recent issues in regard to tin roofing being laid at 4 cents per square foot have interested us considerably, and we have simply to repeat that the material must be a very poor grade, as the price of the material alone in the best roofing plate is more than 4 cents per foot.

Your correspondent strikes the key-note of the situation when he says:

"If the better class of roofers would only take the trouble to educate property owners to understand that but a fraction of a cent per square foot exists between a thoroughly reliable palm oil made plate and a plate made by the acid flux, they would appreciate the hint and act accordingly. It would have the tendency to at least lessen the fierce competition, while property owners would be willing to pay a little more for their tin when the result of its use could be clearly shown."

Tin roofing in the United States is in a very peculiar condition and has been for several years past, and no one has watched this transition period more carefully, with more trepidation, than our firm. More attention seems to be given now to the price than to what one is really to receive. This state of affairs, we regret to say, has been gradually going from bad to worse as time rolled on, and year after year the tendency of buyers has been toward still cheaper grades, such as carry from 3 to 6 pounds of coating per box of 10 14 x 20—112 sheets, and to those execrable light weight plates, until it has become an open secret that most of the old standard imported plates that had enjoyed at one time great popularity, are now being brought in as 100 pounds, 80 pounds, 80 pounds, &c., to the box. As regards the better grades, the demand for heavy coated plates and the fact that appearances can be so easily produced in a cheap way have resulted in the market being flooded in a confusing manner with "old method," "old process," "old this" and "old that." In many cases such plates are nothing more or less than acid flux plates made through patent pots and rolls and carrying a heavy coating. Of course no one would expect such plates to wear for

any length of time, because, no matter what the coating is, corruption is going on within, yet they are branded as above and stamped, and the price being below that at which the genuine article is sold, the temptation is too great for the roofer, who, fortified with the recommendation of the seller, puts on the roof at a price that is satisfactory to the property owner and simply pockets the profit. Such plates cannot be expected to wear, and it should be borne in mind that the mere fact of the plate being stamped with the brand does not make it any better. Nor is it to be expected that a roofer should go into the different tin plate works and note the process of manufacture of every plate that he wishes to consider. Nor will many even go into the subject deep enough to consider whether the brand they buy is worth the price asked? What hope is there, then, for a regeneration of this all important trade? Is a forcing process to be put in operation? Must the property owner educate himself and force the architect to so frame his specifications that a roofer is forced to use the brand specified? Or will roofers take it into their own hands and use the best without regard to outer influence? Then, and only then, we claim, will tin roofing be brought back to its proper plane of prosperity and stand where it once did. Then, and then only, will roofs be as good as in the "old time long ago."

Of course we cannot expect to buy wool at the price of cotton, nor can one expect to buy roofing tin that will wear at the price of the cheap stuff that is now being offered, but the best can be had if one is willing to use it. As "Experience" says in your issue of March 9: "Until property owners are taught to understand that cheapness is not the first requirement (in roofing plates, at least) nothing but constant expense and new roofs will be the order of the day, and we will venture the prophecy that if acid flux plates are put on as recklessly in the next four years as they have been in the past, the cheap tin plate will be utterly abolished and a substitute introduced more favorably adapted to atmospheric action and the length of the buyer's purse."

From the above we think that your readers can draw but one conclusion—use the best tin at all times, and when buying it see that it is the best and exactly what is paid for.

From P. H. LAUFMAN, Pittsburgh, Pa.—In *The Metal Worker* of March 9 I noticed the article from "Experience" on the "Quality of Tin Roofing." I was going to indorse it at the time, because it is all true, but I put it off, and now another article from Kentucky induces me to write you, as "facts are facts, Mr. Gradgrind," and those are what we want. I am sure that the results will be as stated by both your correspondents. The cause of pin holes both in bright andterne plates is the result of the acid process, and this should be iterated and reiterated from one end of the country to the other, or as sure as the sun rises and sets the goose that lays the golden eggs will be killed.

How to Put Collars in a Furnace.

From W. H. H., Washington, D. C.—I would like to learn through *The Metal Worker* an easy way to put collars in hot air furnaces when a flaring top is used and the collars are taken from the slide.

How to Make a Boiler.

From L. E. B., New York.—Will some one tell me how to construct a pipe boiler large enough to supply a small horizontal 4 horse-power engine; also how to make an oil burner to heat the boiler? Can I use gasoline for fuel at less expense than kerosene oil? I will be glad to receive information on these subjects through the Letter Box.

Pattern for Milk Can Breast.

From SUBSCRIBER, Garnett, Kan.—I shall be glad to see published in *The Metal Worker* a method of obtaining the pattern for a milk can breast, the one side of which is perpendicular and the other flaring.

Note.—In previous issues of the paper various modifications of this problem have been presented at considerable length, the one exactly meeting our correspondent's requirements being found in the issue for November 17, 1894. We submit the inquiry, however, to our practical readers in the hope that they may furnish other solutions.

Terms of Partnership.

From G. M. H., Delaware—I wish some of the readers of *The Metal Worker* would inform me what are the usual terms of partnership when a tinsmith and plumber places his trade and experience against capital, with a man who knows nothing of the business. 1, What amount of capital equals the labor and experience, and, 2, should the mechanic pay any rent on store, &c., or interest on any borrowed capital in case there should be any? I should be very glad to have any information regarding the formation of a partnership of this kind.

Which is Best for Furnace Tops?

From REVOLUTION, Trenton, N. J.—Answering the letter of "J. C." in *The Metal Worker* March 2, I think that the furnace top has little to do with the trouble and can only give a guess as to the cause owing to meager information given. He is trying to revolve the air in the house, using the furnace to cause the revolution and the result has not been satisfactory. I should expect to find the trouble in the flues leading from the cellar to the upper rooms, as partition flues seem to be the rule throughout the country. I also assume that there is no register in the hall. The partition flues are long and narrow, an improper shape, presenting a great friction and hindrance to air currents, consequently an insufficient quantity of air is delivered in the upper rooms to heat them. As the hall is not heated, or, if I am wrong in this assumption, is not sufficiently heated, the warm air from all the rooms flows into it, leaving the rooms uncomfortable. Under such circumstances a large register in the hall will relieve matters. Where a furnace takes its air supply from a hall if the doors leading into it are closed it will stop the air from revolving to a serious extent, and if there are vents for the air to escape, like a fire place, there must be some means to supply the hall with air to make up the deficiency caused by the escape. By opening the hall door for a few minutes it can be determined if a better flow of air comes from the registers, and if there is the trouble is easily remedied.

PLUMBING and GAS FITTING.

Pratt Institute Trade School.

The evening classes of the 1894-1895 term at the Trade School of the Pratt Institute, Brooklyn, closed their work on Friday, March 29. In spite of the depression which has ruled during the winter in the building trades the number of pupils was well up to the average, showing the appreciation that exists in the trades of the value of the instruction given there. The progress made in all the departments is reported to have been very gratifying. The number of pupils instructed in the various evening classes in the past season was 133, divided as follows:

Plumbing.....	51
Machine shop.....	22
Carpentry.....	19
Fresco painting.....	22
House and sign painting.....	13
Sheet metal pattern work.....	6

The members of the plumbing class were examined at the close of the term by a committee of the Brooklyn Journeymen Plumbers' Association, with the view of awarding diplomas to such as proved themselves properly qualified. The results of the examination have not yet been made public, but they will probably be known next week.

Kansas City Plumbing Ordinance.

Plumbing Inspector Henry Sieben, in consultation with the plumbers of Kansas City, Mo., has prepared an exhaustive ordinance regulating plumbing and house drainage. The ordinance, which aims to revise the plumbing ordinances of the city, will be introduced at the next meeting of the council. Its principal provisions are as follows:

No person shall carry on the business of a plumber or engage in house drainage without being licensed; such persons must file a bond for \$1000 with the comptroller and deposit \$50 with the treasurer, the deposit to be used in repairing any damage to the streets or alleys not repaired within 24 hours after the superintendent of streets has notified the plumber to do such repairing; permits must be issued by the inspector of plumbing for all digging in the streets; proper protection in the shape of barricades and red lights must be afforded when any street is dug up; all drain and soil pipes shall be of cast iron, securely ironed to the wall, carried out through the highest point of the building, and each house drain shall be provided with fresh air inlet; a gresse trap must be provided for hotels, restaurants and boarding houses, where cooking is done for more than 30 people; all plumbing must be inspected by the plumbing inspector; bathtub waste pipes shall not be connected on the house side of a closet drain; every building must be separately and independently connected with

the main sewer 5 feet outside the building line; the mayor shall appoint one master plumber and one journeyman plumber, who, with the plumbing inspector and superintendent of buildings, shall constitute a board of survey to examine all applicants for a plumber's license; a license shall cost \$15, to be equally divided between the two non-salaried members of the board; but if the applicant is rejected \$5 shall be returned to him and the \$10 divided, but all master plumbers in business at the passage of the ordinance shall be required to pay only \$1 license if they apply within two weeks after the ordinance is passed; no vault shall be built in the closely built up portion of the city where connection with a sewer can be secured, and in no event shall any vault be built within 10 feet of an adjoining building used for human occupation; all plumbers making connections with sewers shall report the same to the city engineer within five days after the work is completed; no connections to manholes shall be made at the upper or dead ends of any sewers; a fine of from \$25 to \$200 is fixed for violations of the ordinance, and the plumber so violating shall forfeit his license for one year.

Draining Plumbing Systems.

From O. C. N. Camden, N. J.—In answer to "G. D. B." in *The Metal Worker* March 16, would say that very few plumbing systems around here are arranged to be drained to prevent freezing over night, though most of them have a stop and waste cock on the service just inside of the cellar wall. In some cases I have put a hose cock in the service pipe near the stop and waste mentioned, and made the pipe at this cock the lowest point in the whole system. A hose can be attached to the cock, and when the service stop is closed and the hose cock is opened the hose is carried to the cellar drain, where the water runs off. In one case I connected a lead pipe, with a stop cock on it, direct from the service pipe to the horizontal soil pipe, bending the pipe to make an S-trap with a seal 2 feet deep. None of these arrangements have been used except in case of repairs or when the house is to stand uncoccupied for a time. Though our climate is more severe than the Southern climate our plumbing work does not freeze except where it is exposed to an outer wall that is thin.

Essays at Plumbers' Conventions.

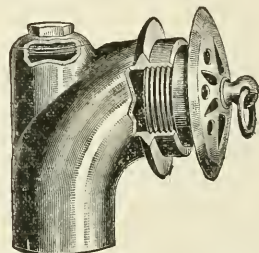
A correspondent writes us, says the New Haven Record, in regard to the presentation of essays to the conventions of the Connecticut Master Plumbers' Association as follows:

I think it is to be deplored that so little time and attention are devoted to this important source of intellectual and scientific advancement, which, in my opinion, should not be displaced by the windy orations of "walking delegates," or after dinner frivolities. I regret the necessity of this criticism of the direct-

ors of our annual conventions, but I believe that its sessions should, in the main, be devoted to the consideration of topics pertaining to the interests of our profession which have received thought and preparation in advance, and should not be wasted on extemporaneous discussions on general questions. An effort has been made to materialize this idea, but members are unwilling to spend time and thought, to be ignored for other less profitable entertainment.

Overflow and Strainer, with Clean Out Screw.

C. A. Blessing, Philadelphia, is introducing the overflow and strainer shown in the accompanying cut. It is made of brass, in polished or nickel



Overflow and Strainer with Clean Out Screw.

plated finish and suitable for use on any style of tub, open or closed. The screw or plug seen on the body of the overflow is removable and permits of straight access to the overflow pipe for clean out purposes. In this way hair and other matter escaping from the bath through the strainer may be removed with little difficulty and the pipe kept thoroughly clean. The article is patented and is made in the usual size, 1½ inches, both for lead and iron pipe.

To Prevent Kitchen Boiler Explosions.

From SAMUEL HEINS, Rondout, N. Y.—I have been asked so frequently how to avoid the danger of boilers exploding that I have answered I would endeavor to give them the necessary information through *The Metal Worker* and have advised the inquirers to become subscribers to such a valuable paper for all kind of information relating to plumbing, steam and hot water heating, ventilation and tin, sheet iron and copper work. In former years when *The Metal Worker* was first published and since then it has enlightened many a fellow workman in those branches of business. I have written many letters to the paper when it made its first appearance and I must state it was through me that the first plumber's gasoline furnace was introduced to its readers. I am always glad when the time arrives for the next edition and

now I will proceed on the dangers connected with the range boiler and how to avoid them. It is not an uncommon thing to hear of the explosion of the range boiler with more or less disastrous results. Numerous cases of death are reported and serious scaldings and much wreckage of dwellings. The only wonder is that there are not more of these accidents when one considers the extremely careless way in which many boilers are put up. A very hot fire is made, the water reaches a tremendously high temperature and generates steam with a pressure sufficient to run a small engine. Added to this is the pressure from the mains and a source of great danger is present in the household. Every kitchen boiler should be provided with a valve or an escape pipe of some sort. One of the best arrangements of this kind ever devised was some years ago put into a house with a tank supply and it has worked so well that none of the so-called scientific improvements have been welcomed to displace it. A small pipe is carried from top of the boiler to the top of the house. Here it makes an abrupt turn, going down again to the tank in the bathroom. A smaller pipe is attached at the highest portion on the bend and this runs out at the roof by the side of the bathroom ventilating pipe. This house is so situated that the pressure is usually heavy and this device was adopted because a very strong valve must be used, too strong to be safe under ordinary circumstances, as the water would be forced through the escape pipe. As at present arranged the waste water which goes up through the pipe returns to the bathroom.

It has for a long time been held by some plumbers that there are obscure reasons of some sort why boilers explode. Experiments have proved that there are simple, natural laws that operate in these cases. There is no unknown and dangerous gas, as has sometimes been stated, but there is almost a certainty of an explosion when the pipes have become empty and are heated red hot then deluged with cold water suddenly let in. Every boiler should be provided with safety valves and escape pipes. The valves should be so situated that they can be examined, and this should be a regular duty of the careful housekeeper. In view of the dangers that attend the use of hot water, especially where the pressure from the mains is variable, or when one must depend upon water pumped into a tank, it would be an excellent idea to adopt a section of the supply pipe of glass, the same as the water gauge on steam boilers, or some indicators could be so situated that a lack of water would immediately give notice in some unmistakable way. Then, when indicators, valves, steam pipes and drain ways have been provided it should be the special business of some competent person to overlook these appliances at least once every week.

TRAPS AND VENTS.

H. H. LOWE has bought out the plumbing business of George McLeod, located on Mechanic street, Clinton, Mass., and is removing all the fittings to his residence on East street, where he will continue the business.

A new plumbing business has been opened by A. F. Mayhew on Lowell street, Peabody, Mass.

JOHN WALKER and EDMUND A. MORRIS have made arrangements with the Hotel Cadillac, Detroit, to hold the

next convention of the Central Supply Association there on Monday and Tuesday, June 10 and 11. On Wednesday the guests will be given a yacht ride on the river, and wind up with a dinner at the Rushmore Club, at the Flats.

THE AURORA IRON WORKS, Aurora, Ill., have issued a neat little pamphlet descriptive of the Bignall patent Peerless stop cock box, and containing cogent reasons why it should be adopted by plumbers, which are backed up by numerous strong testimonials.

A CIVIL SUIT has been brought at New Bedford, Mass., by a man who built a house against his plumber. The owner claims the specification called for 4-inch soil pipe to provide for water closets which were to be put in later. The plumber maintains that the specifications did not call for any given size pipe, and there being no closets in the plan, he used 3-inch pipe. Now the owner wants to put in closets, and finds the Board of Health will not let him without using 4-inch pipe, so he sues the plumber to compel him to change the pipe or pay for such changing, amounting to about \$200 in expense.

THE PLUMBING SHOP of John Hawtree, at Englewood, Ill., was destroyed by fire last week.

A. B. KINGSLAND, who recently sold out his plumbing business to the G. S. Blodgett Company, Burlington, Vt., will not leave the city, but has engaged with the Blodgett Company for the coming year.

S. W. HOTCHKISS has opened a plumbing establishment at 11 Dwight street, Springfield, Mass.

E. S. GRAY has opened a plumbing establishment at Fairfield, Conn.

H. O. TAYLOR will open a plumbing establishment in Danbury, Conn.

HAYES & ROURKE, New Haven, Conn., are to build a three-story building with two stores and dwellings. One store will be fitted for their plumbing business as a showroom, with a shop in the rear. Two hot water heaters will be used for the heating.

PETER HANSEN, Superintendent of Highways and Water Works at Rhineland, Wis., adopted what proved to be an efficient method for preventing the water pipes freezing during the cold weather of last winter. His method consisted in feeding live steam into the mains at the pumps at the water works and so raising the temperature of the whole water supply sufficient to keep it from freezing, even where the frost had penetrated below the pipes. There are $7\frac{1}{2}$ miles of mains in the system and through the use of steam the temperature of the water was raised from 33° to 39° .

JOHN GIBBIE has been granted a plumber's license at Jacksonville, Fla.

THE JOURNEMEN PLUMBERS of Portland, Ore., made a complaint to the Board of Health against the use of rubber connections on the flush pipes to water closets, which was promptly dismissed as unreasonable.

CAWLEY & TROW is the name of a new firm of plumbers who have begun business in the Hawkes Building on Washington street, Marblehead, Mass.

R. S. SHOLES, JR., 185 Franklin street, Norwich, Conn., is fitting up a modern plumbing showroom. He has just put in new iron enameled bathtubs, the latest improved hot water boilers and laundry tubs. Mr. Sholes is a

graduate of the New York Trade School.

COMMISSIONER EMERY, Brooklyn, has announced the appointment of the following inspectors of plumbing: Francis J. Foley, 470 Sackett street, and James O'Connell, 396 Bergen street.

WILLIAM MALTEY, Stoughton, Mass., has purchased an interest in the hardware and plumbing business of A. H. Linton.

ORDINANCE 590 has been passed providing for the government of and directing the duties required by the city of Altoona, Pa., to all plumbers doing business in the city, with penalties as set forth, and defining the powers of the water commissioners and the authority of the superintendent of water.

THE PLUMBING ESTABLISHMENT of Johns Bros., Scranton, Pa., was visited by fire last week.

THE INSPECTORS OF PLUMBING as appointed by the Board of Health of Amherst, Mass., are L. W. Banning and E. I. Bangs.

THE ALBERENE STONE COMPANY, 217 Lake street, Chicago, are to remove their warehouses from Jackson street to the building at the southwest corner of Monroe and Clinton streets.

The following plumbing firms have lately started business in Chicago: Edward H. Palmer, 3847 State street; Mulcahy & Co., 6736 South Halsted street; Reiny Van Doyle, 8223 Emerald avenue; Macauley & Mayer, 234 Mulhawk street.

THE GUBEEN STRAUS PLUMBING COMPANY have been incorporated at St. Louis, Mo., with a capital stock of \$5000, one-half paid. The incorporators are John Gubeen and Gustave Strauss, each of whom owns 19 shares, and W. D. Quigley, 12 shares.

F. M. BORDEN & BRO., 118 North Second street, Philadelphia, are sending a typewritten circular letter to the plumbers in their vicinity calling attention to their line of Reliable gas ranges and gas cooking goods, which, it is said, has elicited considerable interest.

MAYOR, LANE & CO., 128-132 White street, New York, are in line with a series of siphon jet closets, under the names of Puritans and Priscillas, which they claim are reliable and prompt in action and noiseless. A sectional view of their Puritana closet in a circular they are distributing shows that it stands $15\frac{1}{2}$ inches high, and the extreme distance from the wall required is $23\frac{1}{2}$ inches, with a distance of $11\frac{1}{2}$ inches from the wall to the center of the outlet to the soil pipe.

THE GILBERT & BARKER MFG. COMPANY are established in their new quarters at 82 John street, New York. The company make a special display of their gas manufacturing and cooking appliances. They have placed one of their gasometers under the sidewalk, and in the cellar they have an air pump and regulator. With this apparatus gas is manufactured for showing their line of cooking apparatus and for lighting their store. Several Welsbach burners are attached to their fixtures, and the store is as brilliantly illuminated as if an arc electric light was used. Along one side of the showroom they have arranged their Springfield gas machines, which are used to manufacture gas for residences situated where there is no gas works to supply consumers. Opposite them is shown a

line of Clark's Jewel gas ranges, hot plates, broilers and appliances. A notable exhibit is Clarke's instantaneous water heater. This apparatus rests on a bracket on one side of the showroom, and is connected with the water service pipe of the building, the outlet running to a lavatory on the opposite side of the building. A pilot light burns continuously under the water heater, and on opening the faucet at the lavatory the flow of water to it operates a valve at the water heater, which opens a gas valve and supplies gas to the burner under the water heater, which is lighted by the pilot light, and as soon as the cold water in the pipe between the heater and the lavatory is run off hot water runs continuously as long as the faucet is opened. This exhibit is a novelty and shows a device in operation which seems to be widely applicable for household use and for the lavatories in office buildings. All the appliances on exhibition are using gas made from their Springfield gas machine in the cellar, although in the heart of New York City.

THE PLEUGER & HENGER MFG. COMPANY, St. Louis, Mo., have issued their No. 7 plumbing and water works catalogue, which is a volume well bound in cloth, measuring 7 x 10 inches in size and containing 174 pages. In handing to the trade this revised catalogue of plumbing and water works specialties the manufacturers call attention to the lines which they have added and not heretofore illustrated. Following an alphabetical index which begins the book, the first section is devoted to service boxes, valve boxes, gate valves, hydrants, street washers, hydrant valves and hose valves, stop and waste valves, &c., to which some 60 pages are devoted. Next comes a line of brackets of various designs and sizes. This is a line to which the manufacturers particularly allude and it will be of much interest to the plumbing trade. The first goods, known as antique pattern, are of elaborate design. A variety of new patterns in brass follow, some of them being exceedingly neat and tastefully designed. The line includes brackets for a variety of purposes, including closet tanks, sinks, &c. After this comes a large assortment of legs for lavatories, closets, wash trays, &c. Brass pipe is another new feature of the book, and one page is devoted to an illustration of the National trap, made of brass. This is followed by globe traps, S-traps and combination traps, towel racks, &c. Lawn sprinklers come next; then a variety of special goods such as combination sinks and traps, sinks, drinking fountains, cesspools, ceiling plates, &c. Stop cocks, bibbs, stops, cocks, and combination cocks are illustrated in the greatest variety of patterns and styles and the extent of the line may be understood from the fact that some 60 pages are given up to this assortment.

IT IS REPORTED that S. L. Boggs, Allegheny, Pa., is looking for a site to manufacture enameled bathtubs and plumbers' goods.

B. FRANK HOOPER, president of the Colwell Lead Company, 63 Centre street, New York, has sailed in the steamship "Fulda" for Gibraltar. Mr. Hooper proposes to be absent for about two months. His tour, which is undertaken purely for rest and recreation, will include Gibraltar, Algiers, Naples, Rome and other Italian cities, from whence he will return by way of Paris and London. This is the first occasion on which Mr. Hooper has crossed the

Atlantic or taken any very extended holiday. His friends hope to see him return greatly benefited by the change of scene and interests which he will find on the European continent.

S. H. MORGAN & Co. have purchased the plumbing, steam and hot water fitting business of W. I. Bolt, 1191 Jefferson avenue, Detroit. Mr. Morgan has been with the Detroit Heating & Lighting Company for the past five years, acting in the capacity of secretary of the company. They report the business outlook very bright.

L. R. CHURCHILL, plumber, of Brockton, Mass., has formed a partnership with Wm. S. Washburn of Wollaston, and in future the business will be conducted under the firm name of Churchill & Washburn. Mr. Washburn graduated from the mechanical engineering department of the Worcester Polytechnic Institute, class of 1882, and since that time has been engaged in engineering and manufacturing work.

BREEN BROS. have opened their newly refitted store, 213 Genesee street, Utica, N. Y. They will occupy the entire building. In their showroom they will carry a complete line of fine plumbing goods, steam and hot water heaters and one of the largest exhibits of stoves in Central New York.

A Few Hopeful Indications.

It is an agreeable relief to note an occasional tendency to better business conditions, says *The Iron Age*. For many weary months hardly a break occurred in the publication of dismal chronicles. Wages were being reduced, prices were falling, factories were closing, railroad earnings were decreasing, and the whole commercial world was in a state of almost hopeless resignation to an indefinite continuance of poor trade. Credit had received so many staggering blows, one after another in quick succession, that confidence seemed to be a lost trait in suffering humanity. But as the longest and worst winter in the memory of any one living has now run its course, so also has the severest depression in the business experience of the present generation about terminated its wretched career. And now, instead of a daily report of discouraging and calamitous events, we are steadily being treated to a stream of incidents of a hopeful character. These are not yet so exceedingly good as to demonstrate the complete recovery of trade. Here and there are to be found unpleasant reminders of our still unsettled and perturbed condition. Some unexpected failures have quite recently taken place, and in a few trades it seems that the unpleasant necessity exists of further reducing wages. But these are only ripples on the broad stream of the nation's commerce, and its generally placid condition is in sharp contrast to its recent storm-tossed state. A few of the evidences of improvement are decidedly worth noting.

Perhaps the most cheerful indication to be found in the whole horizon now in view is the advance in wages recently granted to Western Pennsylvania coal miners and coke workers. Even if the advance in the one case was secured by a strike of gigantic proportions, and in the other case was due to special causes yet to be disclosed, nevertheless the advance thus made is a very important and deeply significant fact. It is years since employers have seen their way clear to mark wages up in

any branch of trade whatever. The tendency has been downward and very strongly downward. That tendency has not only been checked, but a distinct gain has been made in the other direction in the case of not merely a handful of men, but many thousands. It may be found after due trial of the higher schedule of wages that the advance was premature and that the general condition of trade did not warrant it, in which case a reduction may again have to be made. But let us hope that this will not occur. It would be far better for everybody directly interested, and vastly better for the entire country, if the example thus set in the coal and coke trades can shortly be followed by an improvement in the wages paid in other industries. The magnificent prosperity of America in the golden past was due to the purchasing power of the American masses, which was unequalled in any other country on the face of the globe. Better wages, if attended with full employment, will restore those halcyon times.

Another indication of improvement, although it may be regarded as of a negative character, is the stubborn resistance to further concessions which is manifested by many manufacturers. It is no longer easy to induce a manufacturer to discount his bottom price. The limit of endurance has been reached, and the gradual increase in consumption forms at last a basis on which to rest a stand for better prices. If this is once established so that buyers are convinced of it, a general movement to stock up may be expected, and the country is so bare of stocks of manufactured goods that even a moderate impulse in this direction cannot fail to exert a mighty influence along the whole line. The West is particularly short of stocks, as shown by the urgent demand for prompt shipment whenever orders are placed, and it would not be surprising at any day to find the buyers of that section taking all kinds of goods with something like their old-time vigor. Reports from the most impoverished districts, sorely stricken by drought last year, state that the people are bravely making preparations for the coming year's battle with nature's forces, and that they have every reason to expect their labors to meet with success. If they do but fairly, other parts of the West will do grandly, and heavy business will again rejoice the hearts of the managers of the great east-and-west lines of railroad. But it is by no means an insignificant fact that the earnings of some of the greatest of these systems are even now increasing. The opening of spring has quickened the energies of the people, and the general resumption of outdoor operations has necessitated the movement of much material, creating a traffic that may continue of goodly proportions until the crop movement begins.

Bids are invited at Norman, Oklahoma, until April 15, for furnishing a quantity of 4 inch cast and wrought iron pipe, hydrants, &c.

Work at the Great Western Pottery, Kokomo, Ind., has not been interrupted to any appreciable extent by the recent strike of the operative potters at that place. A sufficiency of men has been readily obtained to fill the places of the strikers.

Exports of galvanized iron from the United States to Canada have shown a considerable increase lately.

TIN PLATES.

Quarterly List of American Tin Plate Works.

With the object of furnishing to the tin plate trade and to consumers of tin plates generally the latest and most accurate information obtainable in regard to the status and products of the domestic industry, we began, in July of last year, the publication of a periodical list of American tin plate manufacturers and their brands. A similar list, corrected to date, has since then been printed in the first issue of *The Metal Worker* in each quarter, and has been received with many expressions of favor by our readers. Following this custom we present herewith the fourth of these lists. In some respects the present one is fuller and also more interesting than any that have preceded it.

Attention is specially called to a new feature introduced in the present exhibit, namely, the numbers of black plate mills in existence, in operation and building. The statistics furnished under these headings will enable our readers to form a good estimate of the capacity of the existing domestic tin plate works, in arriving at which the number of tinning sets possessed is of course no guide. The names of several new firms will be found on the present list, while those of a few concerns, which have fallen out of the race in the past quarter, have been dropped. The list includes every firm in the United States now making or about to make tin plates or black plates for tinning.

Tin Plate and Black Sheet Imports.

The complete returns of imports into the United States for the fiscal year ended June 30, 1894, just issued by the Bureau of Statistics at Washington, contain the following information in regard to the amounts and values of tin andterne plates and black sheets entered for consumption during that period:

The imports of tin plates amounted to 454,159,826 pounds, or rather more than 4,000,000 boxes, calculated on a basis of 112 pounds to the box, the following being the principal ports of entry: Baltimore, 65,771,999 pounds; Boston, 19,762,484 pounds; New Haven, 1,116,188 pounds; New York, 189,581,807 pounds; Philadelphia, 77,576,622 pounds; Portland and Falmouth, Maine, 3,769,614 pounds; New Orleans, 3,645,099 pounds; Oregon, Ore., 2,235,360 pounds; San Francisco, 36,385,077 pounds; Willamette, Ore., 1,572,698 pounds; Buffalo, 1,906,480 pounds; Chicago, 26,320,578 pounds; Miami, Ohio, 1,043,590 pounds; Milwaukee, 4,073,493 pounds; Minnesota, Minn.,

1,534,677 pounds; Cincinnati, 1,721,311 pounds; Kansas City, 3,865,080 pounds, and Omaha, 4,215,473 pounds.

It is interesting to note that the total imports of the Pacific Coast, therefore, footed up to 40,716,041 pounds, a trade which the American makers will find it hardest to wrench away from their Welsh competitors.

During the fiscal year under review duties were paid on 436,780,713 pounds of tin plate, of which 426,739,364 pounds were lighter than 63 pounds per 100 square feet.

The imports of black sheets and taggers valued at 3 cents per pound and thinner than No. 25 gauge footed up to 2711 net tons. Cold rolled sheets thinner than No. 25 gauge, which constitute the raw material of the tin dipping industry, were imported to the extent of 25,181 net tons. Of sheets pickled and cold rolled the imports between the gauges Nos. 20 and 25 were 614 net tons and below 25 gauge 2462 net tons. Galvanized sheets figure to the extent of 428 net tons. Planished sheet iron is down for 548,087 pounds, valued at \$27,650.

Treasury Rulings.

Acting Secretary Wike of the Treasury Department has made a ruling of importance concerning tin plate. In a letter to the Collector of Customs at Halifax, Baltimore, Md., he sets forth the decision, as follows:

"The Department is in receipt of your letter inquiring at the request of Ammidon & Co., of your city, whether strips of tin plate collected at Halifax, Nova Scotia, from manufacturers of tin cans may be imported into the United States as 'waste' subject to duty at the rate of 10 per cent. ad valorem, under Paragraph 362 of the act of August 28, 1894. Upon an examination of the sample of strips submitted it appears that they can be used without undergoing any intermediate process of manufacture for many of the purposes for which entire tin plates might be cut into strips, and that while such strips are no longer strips within the meaning of Paragraph 121, they still retain much of the character of an article manufactured for definite uses. The Department, therefore, concurs with yourself and the United States Appraisers at New York in the opinion that said strips are provided for and should be classified as manufactures of metal dutiable at the rate of 35 per cent. ad valorem under Paragraph 177, and not as waste not otherwise provided for mentioned in Paragraph 362."

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., are distributing among the trade a card bearing on the back their advertisement together with a number of details in relation to their works. On the face of the card is a map of the Central States, showing the location of the company's works at Elwood, and of their sales office at Cincinnati.

SCRAP.

TO A REPORTER of the *Cleveland Leader*, A. M. Britton, treasurer of the Britton Rolling Mill Company, Cleveland, Ohio, stated that although the company have only recently started, the tin mill having been put in operation this month, they have already received a large number of inquiries and are booking many orders, far more from the very start than they expected to have to fill, notwithstanding that the plant is too new to have the prestige of much advertising. The Britton Rolling Mill Company bought out the plant and good will of the late Cleveland Tin Plate Company.

IN ORDER to meet the growing demand for their continuous roofingterne, the American Tin Plate Machine & Mfg. Company, Linfield, Pa., are adding two more Buckman tinning machines to their equipment, making six in all.

MEURER BROS. COMPANY, Brooklyn, N. Y., are receiving congratulations over the report of the expert appointed by Mayor Schieren of that city, to investigate alleged defects in the roof of the Thirteenth Regiment Armory. The expert, Mr. Orth, exonerated the Meurer roofing tin used on the armory from any responsibility for the leakage complained of.

ALL the heavy machinery for the new National Tin Plate Works, Anderson, Ind., has been placed in position. Work is being rapidly pushed to complete the plant, which, it is expected, will be in operation in the course of next month. When completed, the plant will, it is stated, furnish employment for several hundred persons.

THE ATLANTA STEEL & TIN PLATE COMPANY, Atlanta, Ind., commenced operations last week with 200 men employed and a full complement of orders on their books.

THE FALCON TIN PLATE & SHEET COMPANY, Niles, Ohio, have begun tinning their own black sheets. They have at present six tinning sets under way and purpose increasing their complement to 12 in the near future. A circular issued by the concern gives a list of their product in tin andterne plates, which includes four grades of bright charcoal, one of coke and six ofterne plates. The works of the company are equipped with the most modern and improved machinery and are designed to turn out a very high quality of material.

THE OFFICES of the Etna-Standard Iron & Steel Company, Bridgeport, Ohio, which were badly damaged by fire some time ago, have been repaired and refurbished, and the firm again took possession of them last week.

THE following well known members of the tin plate trade were elected this week on the Board of Managers of the New York Metal Exchange: Spencer A. Jennings of Bruce & Cook, W. H. Wells of Robert Crooks & Co., and Charles S. Trench of C. S. Trench & Co.

Pollanabee Bros. Co	Pittsburgh, Pa.	5	2	1	3	3	Blairsville Best Bright, Clifton, Cone- maugh	Furnace	Danquene, Neville, O'Neil, Old Style, Pittsburgh, Ray- mond, Scott's Extra Coated, T. R. Old Style.
Great Western Tin Plate Co	Joliet, Ill.	2	1	3	3	3	Swansea No. 1 Best, Swansea No. 2	Swansea No. 3	Cardiff No. 1 Best, Cardiff No. 2, Cardiff No. 3.
Gumme, Sterling & Co.	Philadelphia, Pa.	4	4	4	4	4	Climax, Colonial, Mrs. Neptune, Phoenix, Stag, Sun, Victor	Champion	Albany, Anchor, Clunox, Continental, Eagle, Flag, Har- cules, Leominster, Liberty, Phoenix, Pomsy, Old Method, Pioneer, Venus, Waldo, X. L. C. R.
Hamilton, John	Glenwood, Pa.	3	2	3	3	3	Ivy, Pansy	Pink	Harris, Fort Pitt, G. A. R., Hamilton's Best, Redlined, Hazelwood, Kilbuck, Lulu, Mingo Old Process, Oscar Old Style.
Irondale Steel & Iron Co	Middletown, Ind.	6	6	3	3	3	Crane	Crane	Crosby Terne, I. S. I.
La Belle Iron Works	Wheeling, W. Va.	2	2	2	2	2			
Lalanc & Gresham Mfg. Co.	Harrisburg, Pa.	2	2	2	2	2			
Laufman Tin Plate Co.	Butler Junction, Pa.	1	1	2	2	2	Laurel	Laurel	Albany, Freeport, Laufman's Apollo, Tip Top.
Laufman (P. H.) & Co., Limited	Apollo, Pa.	4	4	4	4	4	Laurel	Laurel	Laurel's Apollo.
Laurel Tin Nail Co.	Martin's Ferry, Ohio	5	4	1	1	1	Laurel	Laurel	Grand, Marshall Heavy Coated, Marshall Redlined, Penn Treaty
Marshall Bros. & Co.	Philadelphia, Pa.	5	4	1	1	1	Laurel	Laurel	Grand, Marshall Heavy Coated, Marshall Redlined, Penn Treaty
McDonald (The James) & Sons Co	Cincinnati, Ohio.	2	2	2	2	2	Laurel	Laurel	Alaska, The Jas. McDonald & Sons Co. Old Style.
Merchaut & Co., Incorporated	Philadelphia, Pa.	2	2	2	2	2	Laurel	Laurel	Alaska, Arch, Crescent, Empires, Hand Coated, Hickory, Merchant's Old Method, Merchant's Roofing, Palm, Special Extra Coated.
Meurer Bros Co.	Brooklyn, N. Y.	9	9	6	6	6	Howard, Florida	Howard, Florida	Excelsior, Flushing, Grace, Meurer's Old Method, Meur- er's Old Method, Standard, Superior.
Monongahela Tin Plate Co.	Pittsburgh, Pa.	9	9	6	6	6	Montpeller	Montpeller	F. W. R. Old Style, H. C. B., J. H. R., P. T. L.
Montpeller Sheet & Tin Plate Co.	Montpeller, Ind.	6	6	4	4	4	Montpeller	Montpeller	Leatherwood.
Morewood Co.	Gas City, Ind.	6	6	4	4	4	Dorothy, Grace, Jack.	Dorothy, Grace, Jack.	
Morton Tin Plate Co.	Cumbrides, Ohio	3	3	3	3	3	Morton	Morton	
National Tin Plate Co.	Anderson, Ind.	6	6	10	10	10			
New Castle Steel & Tin Plate Co	New Castle, Pa.	6	6	10	10	10			
Norton Bros.	Maywood, Ill.	16	16	2	2	2	Belle Isle, Belmont.	Belle Isle, Belmont.	
Old Dominion Iron & Nail Works Co.	Richmond, Va.	4	4	2	2	2			
Pennsylvania Tin Plate Co	New Kensington, Pa.	4	4	7	7	7			
Phillips Tin Plate Co.	Philadelphia, Pa.	5	5	5	5	5	Century, Oak	Century, Oak	
Pittsburgh Tin Plate Works	New Kensington, Pa.	2	2	7	7	7			
Pollock & Co., Ltd	Philadelphia, Pa.	1	1	3	3	3	Record Charcoal A. Record Char- coal A1.	Record Charcoal A. Record Char- coal A1.	
Record Mfg. Co.	Cincinnati, Ohio.	1	1	3	3	3			
Reeves Iron Co.	Canal Dover, Ohio.	8	8	18	18	18	Granite, St. Louis	Granite, St. Louis	
St. Louis Stamping Co	St. Louis, Mo.	4	4	3	3	3	Somerbrook, Somerton	Somerbrook, Somerton	
Simpson (W. T.) & Co.	Cincinnati, Ohio.	4	4	3	3	3	Brilliant, Hard Dipped, Linden, Mar- ton, Royal	Brilliant, Hard Dipped, Linden, Mar- ton, Royal	
Somerton Tin Plate Works	Brooklyn, N. Y.	8	8	22	22	22			
Star Tin Plate Co.	Pittsburgh, Pa.	3	3	3	3	3			
Taylor (N. & C.) Co.	Philadelphia, Pa.	3	3	3	3	3			
Thompson (A. A.) & Co.	New York, N. Y.	5	5	12	12	12	U. S. Bright, Versailles, Yongblo- g	U. S. Bright, Versailles, Yongblo- g	
Trotter (Nathan) & Co.	Philadelphia, Pa.	4	4	0	0	0	Irondale A. A. A. Irondale A. A. Irondale A. A. A. Irondale A. A.	Irondale A. A. A. Irondale A. A. Irondale A. A. A. Irondale A. A.	
United States Iron & Tin Plate Mfg. Co.	Dennuier, Pa.	2	2	2	2	2			
Wallace, Banfield & Co.	Irondale, Ohio	2	2	2	2	2			
Wheeling Corrugating Co	Wheeling, W. Va.	2	2	2	2	2			
Whitaker Iron Co	Wheeling, W. Va.	2	2	2	2	2			
Totals		130	80	40	72	31			

Building
large extension now being
made to the works.
Machine plates for their
own use only.

Expect to begin operations
next month.

Building.

Building.

Operation suspended.

Building.

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STEAM AND HOT WATER.

Trouble with Steam Mains.

From S. B., Dalton, Mass.—With a one-pipe steam job, with all the pipe properly pitched to drain the water from the radiators, and the valves on some of the radiators shut, what causes the water to collect in the pipe from the main to the valve on the radiator closed off? Also, what causes the water to rise in the boiler when one or more of the valves on the radiator are opened? Why does a pipe from the main to a radiator become cold when there is no collection of water in it? I should be glad to hear from the practical readers of *The Metal Worker* on this subject.

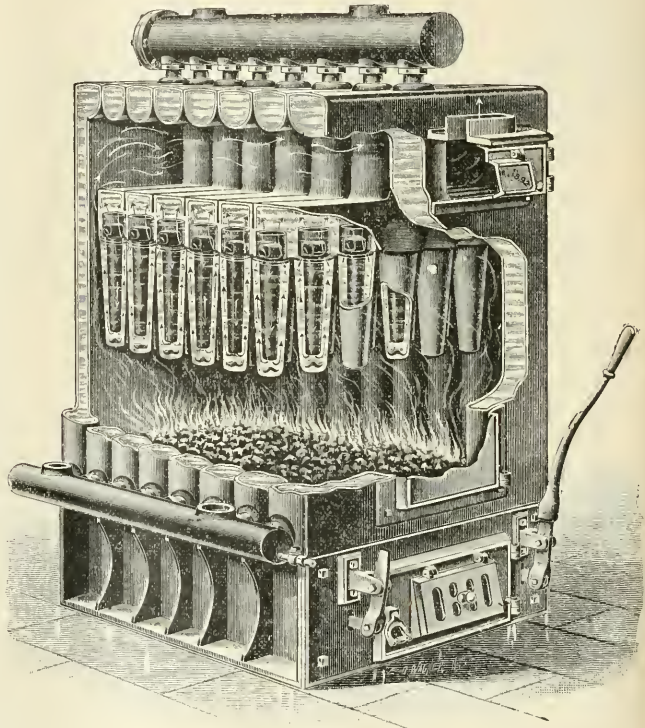
Note.—We hope our readers will respond to this request for assistance. It would seem that the steam valve did not close effectually and permitted a small quantity of steam to pass the radiator, where it condensed and returned to the branch pipe. It is possible that the water is held in check in this branch from the fact that the steam main is not large enough to permit a return of the condensation when steam is flowing through the pipe. On opening the valve on a radiator the steam will flow into the pipe and equalize the pressure on both sides of the water that has been held in check when it would return to the boiler, and if of any considerable quantity would cause a change in the water line. The pipe which remains cold when there is no water in it has probably an accumulation of air in it which will not permit the steam to enter and warm it.

The Invincible Boiler.

A new sectional boiler has been tested during the past winter by John A. Scollay, 74 Myrtle avenue, Brooklyn and 89 Centre street, New York, and is now being put on the market under the name *Invincible*. The accompanying illustration shows a sectional view of the boiler. The boiler is composed of a front and back section, with intermediate sections with which it can be made in different sizes. The water leg of the section is made in a half circle so as to expose the greatest amount of surface to the fire. The intermediate sections are arranged so that the products of combustion pass to the back end of the chamber, where they rise and, through flues arranged in the sections, come to the front of the boiler, where the smoke outlet is placed. When desirable the smoke outlet can be placed at the back of the boiler and the products of combustion made to come to the front and then pass back to the outlet. Suspended from the intermediate sections are drop tubes so constructed that the water from the section passes down a tube inside of the outer tube, and then passes up against the fire surface to the section, being discharged into the sec-

tion at a point higher than that at which it is received. By this construction an exceptionally large fire surface is secured, and at the same time a large combustion chamber provided. The surface of the sections exposed in the flues of the boiler are of the half circle character to increase the surface, and the flues can be readily cleaned through the large doors provided for the purpose. The boiler is provided with a shaking grate, the grate bars resting in pockets made in the side of the water leg. The grate is so arranged

They are heavy, and have a sufficient taper to prevent them bursting. It is claimed that the tubes have been filled with water and exposed this winter so that they were frozen solid; when it was found that the inner tube lifted and that no damage was done to either the inner or outer tubes. A lift draft damper is provided both at the ash pit and at the smoke outlet, and arranged for attaching to an automatic damper regulator. The sections are so constructed that the flow header may be connected at the top of the sections or



The Invincible Boiler.

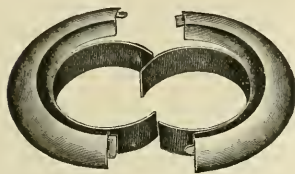
that by attaching the shaking lever at either the right or the left side each alternate grate bar is shaken. This relieves the grate apparatus of the severe strain, and thoroughly clears all parts of the fire. The entire grate may be removed or replaced through the fire door. The feed door, which is partly shown in the picture, is said to be exceptionally large to facilitate firing. Above the feed door is another wide door through which access is gained to the drop tubes, and through which a brush may be inserted to clear them of any accumulation. The drop tubes have been specially constructed to overcome any trouble from freezing.

from an opening at the side of the sections immediately at the top, by which several inches of pitch may be gained for the piping in low cellars. When the flow header is on the top of the boiler, it is 5½ inches in size; when one is arranged on each side, they are 3½ inches in size, and are arranged for as many openings for branch mains as are desired. The boiler is made in several sizes ranging from 6 to 14 sections, and rated to carry from 1500 to 3000 feet of radiating surface. The fire surface is 26 inches in width; and in a six-section boiler is 36 inches long. In the larger boilers, a bridge wall arrangement will be used to limit the size of

the fire chamber to the proper dimensions. It is pointed out that very little difficulty will be found in increasing the size of the boiler in cases where it may be necessary. The flow main headers can be furnished for using wrought iron pipe, or for using cast iron pipe such as is used in greenhouse heating.

Bishop's Ceiling Plate.

The accompanying illustrations explain the appearance and use of Bishop's ceiling plate, made by A. T. Bishop, Southington, Conn. Fig. 1 shows the whole plate and Fig. 2 shows about one-third of the plate applied to a ceiling where there was a molding, and the pipe came so that it had to be cut back into the molding about half way. This illustration is made from a plate in actual use. The claim is made for the Bishop ceiling plate that it can be very easily applied. It is made from sheet steel, and if the pipe comes too close to the wall, as often happens, and there is no room for a plate, it can be cut with a tuner's shears and any part of the plate will stay in position as well as a



Bishop's Ceiling Plate—Fig. 1.—General View of Plate.

whole one. No tools are needed in applying the plate, it being simply sprung over the pipe one side at a time. This can be done at any convenient distance down from the ceiling and then pushed up into position. The spring which encircles the pipe is $\frac{1}{4}$ inch wide, and also forms a collar, and it is said that the great friction prevents its slipping

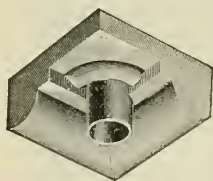


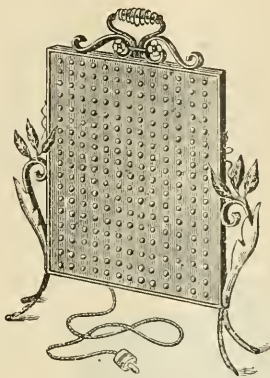
Fig. 2.—Use of Plate Against Molding.

down or crawling. Another point to which the manufacturer alludes is that the plate will answer for a floor plate and the dealer has only to carry half the stock. It is described as very low in price and of neat appearance.

Electric Heating at the Vaudeville Theater.

Crompton & Co. of 148 Brompton road, S. W., says *Industries and Iron* of London, have recently carried out the electrical heating of the Vaudeville Theater. At first it was contemplated to use a system of hot water heating, but, after carefully considering the matter, the management decided that electrical heaters afforded a more advantageous system. Twenty-two "box" or wall radiators and four large portable

radiators, all of the Crompton-Dowsing type, are employed, and they answer the purpose admirably. The temperature of the theater is maintained at 60° , while the corridors may be as low as 40° . The heating arrangements are under absolute control, and any portion may be turned off or on at will. The



Electric Heating at the Vaudeville Theater.

electricity used is taken from the Charging Cross & Strand Electricity Supply circuits, and charged at 4 pence (8 cents) per unit, and when all the apparatus is at work nine units are consumed per hour. With electrical radiators there is no danger of fire, as there is no combustion, and the temperature is about the same as that of hot water pipes. The electrical cables are of Henley's highest quality, switches, cut outs, safety connectors, &c., of the best, and Messrs. Crompton have endeavored to make this pioneer installation complete in every respect. Some difficulty was at first experienced with regard to the Fire Office and London County Council, but all authorities appear now to be convinced that electric heating, when properly installed, is very safe, and perfectly suitable for public buildings. It is stated that electric radiators are often used in an auxiliary sense where sufficient heat is not obtainable in buildings heated by hot water. They are also useful for chilly evenings, and at times when it is not cold enough to work the whole system of heating, but a little warmth is required in any particular room or portion of a room. The illustration shows a portable electric radiator of the type usually supplied.

A High Pressure Job.

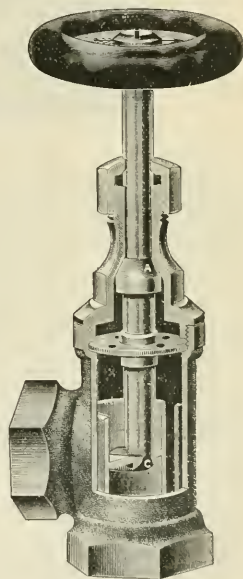
S. M. ART.

He wanted to talk, and as his card proclaimed him an expert I concluded to listen and learn. He said that when he was superintending the installation of heating plants where their boiler was used he always made the pipe fitter "screw 'em up tight." One time a man doubted that the job would stand power pressure and rather sneered at house heating steam fitters. Then just to show him what their work would stand he fired up. The conditions were just right—the chimney had a roaring draft and the blooming chump had a bin of Cannel coal for his grate, so he soon had her blowing off. But as that only took 10 pounds, he got a big "nigger boy," who had been a laborer on the job, to

sit in a sling hung on the lever of the safety valve, but even though he weighed 130 pounds that didn't keep her closed. He then got a 3 x 10 joist and put one end against the joist and rested it on the lever and made the boy get on the other end. Well, that joist must have weighed about 40 pounds, and altogether he calculated that he had 170 pounds on the job, but even then it kept the "nigger" bobbing as if he was on a seesaw. When he got that far I said, "You don't say so." He said, "Ah, yes; and that skeptic went right away perfectly satisfied." I would have gone, too, if I had been there. I put the pressure to him to educate me more, but he went to attend to some pressing business. I'll bet that if he didn't blow off once in a while he'd accumulate pressure enough to bust—no, burst. Well, I don't know which is right; bust is most common, anyhow. I mean explode.

Western Tube Company's Hot Water Radiator Valve.

The accompanying illustration represents a cross section of the new hot water radiator valve manufactured by the

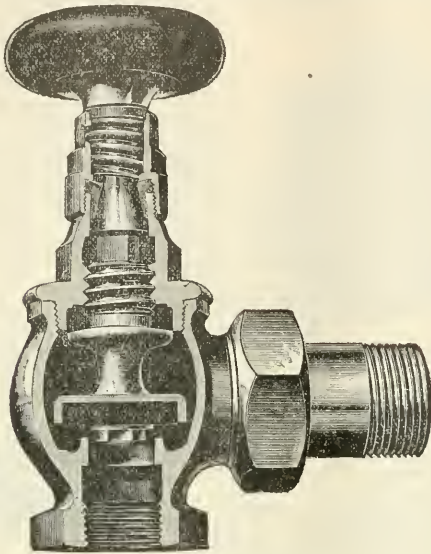


Western Tube Company's Hot Water Radiator Valve.

Western Tube Company, Kewanee, Ill. It is a quarter-turn quick opening valve, which does not stick. Referring to the lettered parts of the cut, A represents the valve seat in the stem, held tightly in place by the spring washer B, so that the valve can be packed while the water is in the radiator. C represents the stem attached to the center of the disk and not to one end, thus giving greater strength. These valves are made in five sizes, ranging from $\frac{1}{4}$ inch to 2 inches, with rough or finished bodies, plain or plated. The manufacturers state that the valves have given excellent satisfaction, overcoming the objections to hot water valves in general use. They are prepared to furnish the valves to the trade in large quantities.

The Morrin Packingless Valve.

The McNab & Harlin Mfg. Company of 56 John street, New York, are putting on the market a packingless valve embodying several new features. The



The Morrin Packingless Valve.

valve is made in two styles, one being provided with the Jenkins seat, as illustrated in the accompanying perspective view, which is partly broken away through the body in order to show the entire construction. In the other form the main valve is shaped as a double cone, so that when one side becomes worn out it may be reversed without trouble, practically doubling the life of this part of the valve. Referring to the upper part of the engraving, it will be noticed that the spindle in its central portion is made conical, and that the upper part of the spindle is surrounded with a spring, the tendency of which is to lift the spindle and keep its conical portion constantly in contact with a corresponding conical seat. By reason of this construction the valve requires absolutely no packing, and the conical portion of the stem in its seat, by the mere fact of the operation of the valve, is kept truly in metallic contact. If fact the longer the valve is in operation the tighter the contact between the conical parts. The lower part of the stem is made square in cross section, and this square part enters loosely into a corresponding recess formed in the valve proper. The upper part of the valve is threaded to fit a corresponding thread in the top of the cap, as shown. From this it will be readily understood that as the stem is turned it will also turn the valve, which will be raised or lowered by its thread according to the direction in which the same is moved. The valve stem, spring, upper bonnet and upper valve seat may all be taken out of the valve for repairs or renewal without shutting off the steam from the pipes, by either first opening the valve to its full extent or closing it. As the stem is made short the contraction of the spindle is avoided and the danger of the lifting of the disk from its seat and consequent leaking are avoided.

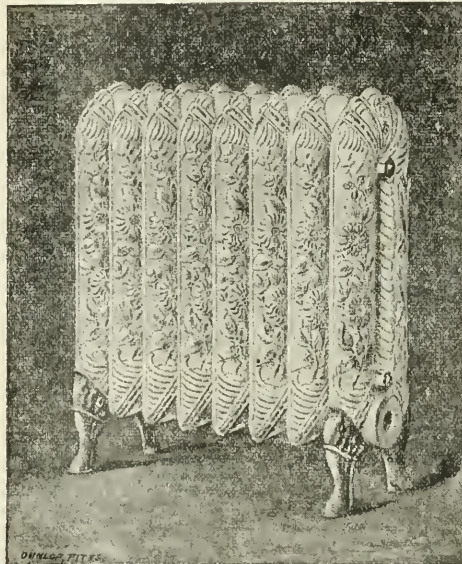
The Ornate Low Radiator.

A new radiator that has recently been added to the line manufactured by the United States Radiator Company, Saltburg, Pa., is shown in the accompany-

ing picture. It is specially designed for use where a low radiator is required, as it stands but 23 inches high, adapt-

Canadian Steam Heating.

A recent and instructive experience with a steam heating plant, says the *Canadian Architect and Builder*, is reported in connection with one of the Toronto public school buildings. Last summer the Bolton avenue school, a two story building, was enlarged to contain 16 class rooms instead of 12. This was done by adding a third story, making an increase of 50 per cent. in the space to be heated. The apparatus formerly consisted of one boiler and plain coils of steam pipes—the usual pressure of steam running at 6 to 8 pounds gauge—and all worked well. For the new story the old mains and returns were enlarged where necessary, and new extensions put in, with cast iron radiators. With the advent of cold weather it was found impossible to make the apparatus do its work, as the water backed out of the boiler into the returns before sufficient pressure could be obtained to make a circulation. Up to this time there had never been a check valve on the return connection with the boiler, and Mr. Bishop, Superintendent of Buildings and architect for the School Board, was of the opinion that to provide one would overcome the difficulty. The contractor for alterations to the plant and others having extended experience with steam apparatus differed from him, thinking this would have no appreciable effect and that another boiler of the same capacity as the one in use would be found necessary. The check valve was put in at a cost of about \$25, and the system worked as perfectly as ever, satisfactorily warming the whole building even during the extremely cold weather which prevailed at times during the past winter. The amount of fuel con-



The Ornate Low Radiator.

ing it for use under windows. It is claimed that each section exposes 3½ square feet of radiating surface. The radiator is made for both steam and hot water.

sumed is about 15 per cent. more than formerly, with a corresponding increase in the steam pressure required. An additional boiler would have cost nearly \$1000, with an annual cost of at least

\$100 more for fuel than the present arrangement. In the building referred to there are 268,000 cubic feet of space with 2200 square feet of window glass. The heating is entirely by direct radiation and the boiler heating surface is one-tenth the radiating surface, a proportion allowed for ordinary buildings by Baldwin, the eminent authority on steam heating. These facts show a rather wide difference of opinion among people who ought to know the requirements, and that the subject of apparatus for heating or ventilating is one with which architects should be thoroughly familiar.

HEATING NOTES.

THE MODEL HEATING COMPANY, Philadelphia, are issuing a six-page folded price-list of their hot water and steam heaters printed in two colors. One of the pages is devoted to cuts of the apparatus showing the Novelty water circulator, indirect draft, the Standard Novelty, the Dwsrf, the Novelty steam generator, and the Novelty circulator. One page is devoted to an invitation to inspect their line of goods, and to call attention that their ratings have proven correct during the past winter. The entire inside of the folder is devoted to a price-list of their soft and hard coal burners, which are made in 101 distinct styles and ratings.

THE ST. JOSEPH STEAM HEATING COMPANY have filed articles of incorporation at St. Joseph, Mo. The object of the new concern is to furnish steam heat in the city, and the capital stock is fixed at \$50,000, divided into 500 shares of \$100 each, of which W. T. Van Brunt owns 225, Charles E. Roehle, 225, and Ernest P. Wetmore 50.

THE STOCK AND FIXTURES of the Jackson Steam Heating Company were sold at auction to William Rowe, Pawtucket, R. I., who will continue the business.

COL. PAUL HUGHES of the Standard Radiator Company, Buffalo, N. Y., was a visitor among the heating trade of New York City last week.

HENRY S. ADAMS, Washington, D. C., was in New York last week in the interest of the new heating plant for the New York Post Office. He visited some of his friends in this city, and talked over the affairs of the American Society of Heating and Ventilating Engineers, in which he takes a great interest.

WILTSIE F. WOLFE of Boston was a visitor at the New York office of the Fuller & Warren Warming & Ventilating Company, 257 Water street, this week. Mr. Wolfe is well pleased by the satisfaction given by a number of their school house plants during the past winter.

JOHN SWEENEY, 242 Waterstreet, New York, is sending to the trade a circular of the Magee hot water heater, made by the Magee Furnace Company of Boston, Mass. The first illustration is a general view of the heater, and the text calls attention to some of its features. The second illustration shows a side view of the heater with the flow and return connections. A description of the heater then follows, with a sectional view of the apparatus showing its operation.

THE UNITED STATES HEATER COMPANY of Detroit, Mich., are to remove their Chicago office from the present location, 100 Lake street, to 39 Dearborn street, where convenient quarters

have been secured for the display of their steam and hot water heaters.

THE ANNUAL MEETING of the stockholders of the Stover Heater Company, Freeport, Ill., for the election of directors for the ensuing season was held at the company's office last week, and resulted in the re-election of the following directors: D. C. Stover, D. B. Schulte, Charles E. Meyer, A. S. Held, W. A. Merrifield, O. J. Ziegler, W. H. Holland, A. L. Frueh, John Tracy, J. J. Tschudy, Jr., Chas. Nieman. The new board then elected the following officers: President, D. C. Stover; vice-president, Chas. E. Meyer; superintendent, A. S. Held; secretary and treasurer, F. W. Sleske; Executive Committee, A. S. Held, O. J. Ziegler, A. L. Frueh.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

HENRY BREYER, 1725 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the residence of G. Roess, 145 Edgewood avenue.

CHARLES UHER, 524 West Eighteenth street, Chicago, has the contract for the plumbing and drainage in the flat building of Frank Hanson, 791 Allport street.

RICHARD T. WARD, 1489 West Harrison street, Chicago, has the contract for the plumbing and drainage in the residence of H. H. Koepee, 1481 West Taylor street.

CHARLES BREYER, 187 West Division street, Chicago, is to do the plumbing and drainage in the residence of J. Koehler, 1229 Humboldt boulevard.

SMITH BROS., 270 Thirty-fifth street, Chicago, are to do the plumbing and drainage in the store building of W. H. Higgins, 153 same street.

JOHN C. GUNDERMAN, 182 North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of Henry Wuestenberg, 65 Mohawk street.

JOHN M. COLLINS, 356 Thirty-seventh street, Chicago, has the contract for the plumbing and drainage in the three residences of W. H. Murphy, Vernon place.

JACOB E. HEADMAN, 656 West Division street, Chicago, has the contract for the plumbing and drainage in the flat building of Julius Fink, 1812 Dearborn street.

JOHN H. SULLIVAN, 328 Division street, Chicago, is to do the plumbing and drainage in the flat building of T. O. Peterson, 135 Sedgwick street.

THIME & ANDERSON, 118 North Centre avenue, Chicago, have the contract for the plumbing and drainage in the four-flat building of E. Stokes, Rockwell and LeMoyné streets.

THE THOROUGHGOOD PLUMBING COMPANY, Rogers Park, are to do the plumbing in the residence of C. Crawford, 763 Jackson avenue.

THE PROPERTY COMMITTEE of the Board of Education of Philadelphia on Tuesday awarded contracts for steam heating fixtures in a number of buildings. The successful bidders for the more important contracts were Thompson Bros., who received the contract for a new boiler in the Mt. Vernon school for \$1275; and Davis & Gorman,

who secured the contract for a heating plant at the Fifth and Porter streets school for \$6088, for heating apparatus at the Adamson school for \$1442, at the Curtin school for \$2063, at the Fairview school for \$1552, at the Forty-sixth street and Woodland avenue school for \$2257, at the Howard and Tioga streets school for \$2033, and at the Diston school for \$1062.

JAMES J. DOYLE, 6040 South Halstead street, Chicago, has the contract for the plumbing and drainage in the two flat buildings of O. E. Engstrand, 6149 and 6151 same street.

ROBERT R. HEANTCH, 5631 Wentworth avenue, Chicago, is to do the plumbing and drainage in the flat building of W. Gardner, 33 Grace street.

THE CHARLES REDIESKE COMPANY, 99 Clybourn avenue, Chicago, are to do the plumbing and drainage in the flat building of Hans Jensen, Belmont avenue and Paulina street.

JAMES J. CONNELLY, 2635 State street, Chicago, has the contract for the plumbing and drainage in the residence of W. J. Stark, 827 Spaulding avenue.

DORE & SON, 1042 West Van Buren street, Chicago, have the contract for the plumbing and drainage in the flat building of Henry Bohne, 1405 Harvard street.

WILLIAM BOWDEN, 238 Twenty-fifth street, Chicago, is to do the plumbing and drainage in the flat building of R. P. Gilson, 5834 Wentworth avenue.

THE KELSEY FURNACE COMPANY, Syracuse, N. Y., have just closed a contract through their local agent in Hartford, Conn., for doing a job of heating in that city with their generator. The contract calls for 12 Kelsey generators of large size, which will be placed in a block of very fine residences now building at the corner of Capitol avenue and Columbia street, Hartford. We understand the contract was only awarded after a careful investigation of the merits of several furnaces, the special feature that recommended the Kelsey being the Positive attachment.

THE Washington State Legislature has passed a bill appropriating \$50,000 for improvements at the State University, such as the erection of a power house, the completion of heating, ventilating and water construction and the erection of a residence for the president.

THE CONTRACT for the plumbing and gas fitting of Charles Myers' new Beach Front Hotel has been awarded to L. E. Freeman, Atlantic City, N. J.

W. H. LATTIN, Bridgeport, Conn., is to erect a new residence which will have a first-class plumbing system.

W. H. MORRISON, Torrington, Conn., has the contract for plumbing and heating in Harlow Pease's new houses, in which he will put a No. 3 Lesder hot water heater; also the plumbing of a cottage for Hotchkiss Bros. & Co. He has just finished the plumbing of the Gilbert School, in Winsted.

THE G. W. HAZEL COMPANY, New Haven, Conn., have the contract for plumbing in the new house of B. A. Tucker.

M. THOMAS, New Haven, Conn., is to erect an \$9000 residence to have a plumbing system and a hot air furnace.

A. H. & C. B. ALLING, Derby, Conn., are to erect a business block that will be heated by steam.

THE TIN SHOP.

The Sheet Metal Class at the Pratt Institute.

It is gratifying to note that the class for instruction in sheet metal pattern work, which was started last fall in connection with the trade school of the Pratt Institute, Brooklyn, and which closed its course on Friday, March 29, has met with complete success. This is the first regular class of the kind undertaken, so far as we know, in any part of the country. It was, therefore, entirely an experiment, and, as such, the undertaking has been watched by us with much interest. That a real want exists among beginners in the roofing and cornice and sheet metal working trades generally for instruction of this kind has long been evident. Numerous inquiries on this head have been received by *The Metal Worker* in the past few years. It was, therefore, with much pleasure that we were able to announce, last summer, that Prof. C. R. Richards, who directs the trade school department at the Pratt Institute, and who is one of the most earnest and progressive advocates

of the applicants was found to be due, not to any misgivings or lack of appreciation on their part, but to the fact that the times were so hard with the workmen in the building trades last fall that many of the would be students found themselves unable to afford the necessary fees. The class was started, however, with six pupils under the tut-

made entirely satisfactory. The whole course covered six months, closing on March 29. This time has been fixed on as the regular term of the class. It is believed that sufficient instruction for all practical purposes can be imparted within that period.

Both Prof. Richards and Mr. Rouillon express themselves as being en-

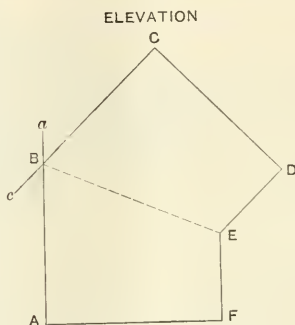


Fig. 1.—Method of Drawing Elevation.

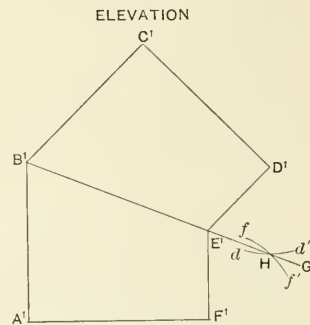


Fig. 2.—Second Method.

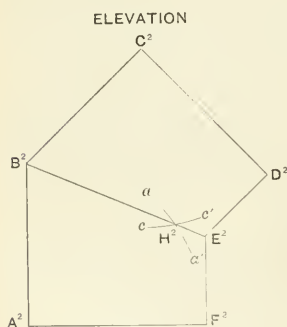


Fig. 3.—Third Method.

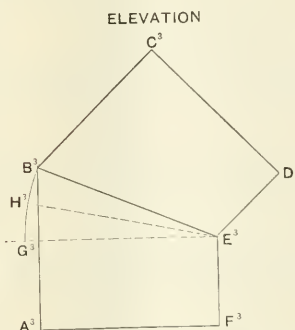


Fig. 4.—Method of Obtaining Miter Line for Three-Piece Elbow.

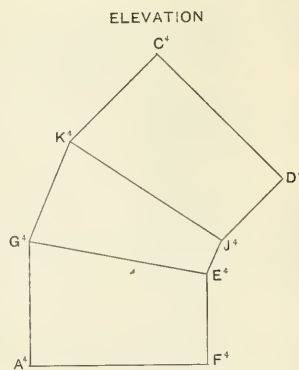


Fig. 5.—Elevation Derived from Preceding Figure.

PATTERN FOR BEVELING ELBOW.

of the trade school movement in this country, had decided to take the initial step in adding an evening class for instruction in sheet metal work to the 1894-1895 programme of the institute.

In point of numbers the composition of the first class was not quite what had been hoped for from the number of inquiries and applications that were received after the first announcements given in these columns. But the withdrawal at the last moment of a number

of the trade school movement in this country, had decided to take the initial step in adding an evening class for instruction in sheet metal work to the 1894-1895 programme of the institute. The curriculum mapped out for the pupils comprised a short course in mechanical drawing, after which followed the study of pattern development on systems embracing the intersection of parallel forms and triangulation, the last two months being devoted entirely to cornice work of all kinds. The intelligent interest in their work displayed by the pupils is reported to have been great and the progress

tirely satisfied with the results achieved. A large accession in numbers is looked for in the second class, which will open next fall. Mr. Richards has recently received a number of inquiries from different parts of the country in regard to the working of the new class, showing that the matter is receiving the attention both of the individuals and of the authorities of other trade training institutions. It is likely that the ball thus set rolling by the Pratt Institute

will grow, and result in the establishment of many similar classes throughout the country in the near future.

Mr. Rouillon, as the result of his recent experience, is now engaged in mapping out a definite system of progressive instruction for the sheet metal pattern classes in future.

Pattern for a Beveling Elbow.

From B. F., *New Orleans*.—When one is to obtain the pattern for a bevel-

C c. From the point of intersection at B draw the miter line B E, thus completing the elevation. For obtaining the pattern the part of elevation indicated by A B E F is all that is required. This part of elevation can be drawn by the method shown in Fig. 2. In this figure let F¹ E¹ D¹ represent the required angle, and make E¹ D¹ E¹ F¹ the same in length. With the dividers set to any convenient distance, and with F¹ as center, strike the arc *f f'*. In a similar manner, with D¹ as center, strike the arc *d d'*. Through the points E¹ H draw G B', extending it indefinitely

In Fig. 3 another method is shown, the miter line B² E² being obtained from the outer angle of elbow. Draw the right angle B² A² F² and let A² B² C² represent the desired angle. Make B² C² equal to B² A². From C² as center strike the arc *c c'*, and with A² as center strike the arc *a a'*. Through the points

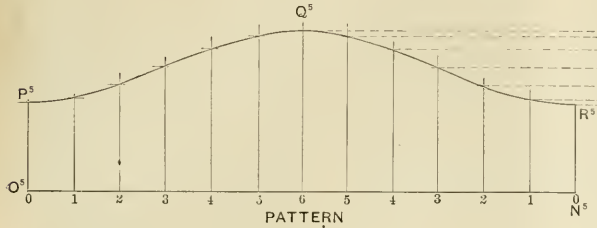


Fig. 6.—Method of Obtaining the Pattern.

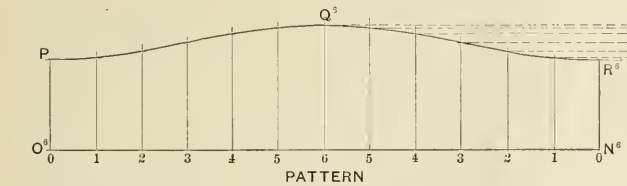
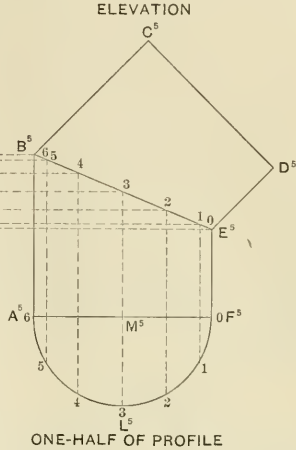


Fig. 7.—Obtaining the Pattern for Three Piece Elbow.

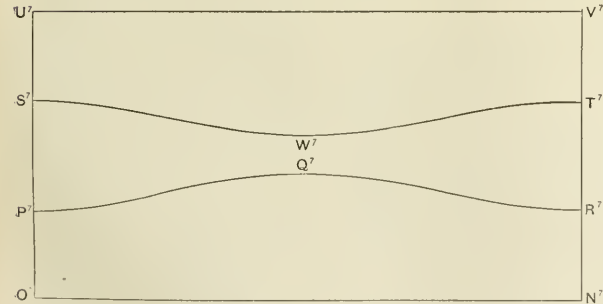
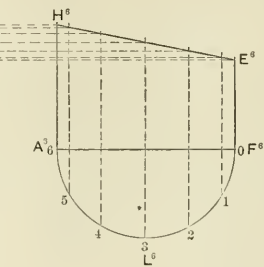


Fig. 8.—Complete Pattern for Three-Piece Elbow.

PATTERN FOR BEVELING ELBOW.

ing elbow, the first step is to draw the elevation, for which purpose there are a number of methods. To draw the elevation shown in Fig. 1 proceed as follows: Let F E D represent the desired angle, and from F D erect perpendiculars, as shown by F A and D C. From F and D set off the diameter of elbow, and from the points thus obtained erect the perpendiculars A a and

in the direction of B¹, thus securing the miter line. From F¹ erect the perpendicular F¹ A¹, and from F¹ set off the diameter of elbow, and draw A¹ B¹ parallel with F¹ E¹, cutting G B¹ at B¹. If it is desired to complete the elevation, from D¹ erect the perpendicular D¹ C¹, make D¹ C¹ equal to diameter of elbow, and draw C¹ B¹ parallel with D¹ E¹.

on intersection, H², draw the miter line B² E², from which the pattern can be obtained. To complete the elevation, from D² erect the perpendicular D² C², and make D² C² equal to diameter of elbow. From C² draw C² B² parallel with D² E². If it is desired to have the elbow made with more than two pieces, proceed as shown in Fig. 4. Let A³ B³ C³, or F³ E³ D³, represent the desired angle. The miter line B³ E³ is to be secured by any of the previous methods. From E³ draw E³ G³ parallel with F³ A³, extending it indefinitely in the direction of G³. With E³ as center and E³ B³ as radius, describe an arc cutting E³ G³ at G³, as shown. Divide the arc thus obtained into one less number of parts than there are to be pieces in the elbow. In the present instance the arc is divided into two parts, as shown. From the first division draw H³ E³, thus securing the miter line for a three-piece elbow, the elevation of which is shown in Fig. 5. If it was desired to have the elbow made of four pieces, the arc G³ B³ should be divided into three parts and the miter line drawn from the first of these divisions to E³.

In Fig. 6 let A⁵ B⁵ C⁵, or F⁵ E⁵ D⁵, represent the angle of elbow. It will be observed that the pattern is obtained from the miter line B⁵ E⁵, which can be secured by means of any of the methods

previously given. Then to obtain the pattern, proceed as follows: Bisect $A^5 F^5$ in M^5 , and with $A^5 M^5$ as radius and M^5 as center, describe the semicircle $A^5 L^5 F^5$. If desired, the entire profile can be drawn, but the half profile can be used as well. Divide $A^5 L^5 F^5$ into any convenient number of parts, and, with the T-square placed parallel with $A^5 B^5$, carry lines from the points obtained in the semicircle, cutting the miter line $B^5 E^5$. On $A^5 F^5$ extended, as $N^5 O^5$, lay out twice the stretchout of $A^5 L^5 F^5$, as shown by $N^5 O^5$, through the points in which draw the usual measuring lines. Place the T-square parallel with $A^5 F^5$, and, bringing it against the points in the miter line $B^5 E^5$, cut the corresponding measuring lines, as shown. Then a line traced through these points, as shown by $P^5 Q^5 R^5$, will be the pattern. In Fig. 7 is shown a duplicate of $A^5 B^5 E^5 F^5$ of Fig. 4. The pattern, as shown by $O^5 P^5 Q^5 R^5 N^5$, is obtained in the same manner as similar part in Fig. 6. Fig. 8 shows the complete pattern for a three piece elbow having the angle indicated in previous figures. $Q^5 W^5$ represents the throat of elbow and $S^5 U^5 V^5 T^5$ is a duplicate of $O^5 P^5 R^5 N^5$.

Trade Schools.

Prof. Charles R. Richards, Director of the Department of Science and Technology in the Pratt Institute, Brooklyn, recently delivered an address before the Monday Evening Club, at Boston, on the subject of "Trade Schools, Their Place, Education, and Industry," which was calculated to rally public sentiment to the support of the movement now on foot for the establishment of a Franklin Trade School in that city. We are glad of the opportunity of printing the following extracts from Mr. Richards' able and interesting plea for this form of trade training for American boys:

"The trade school movement in this country is of very recent origin. It began with the foundation of the New York Trade School in 1881. Trade classes at the Pratt Institute were begun in 1887, and the trade schools of the Philadelphia Master Builders' Exchange were organized in 1890. The work of these institutions represents practically everything that has been done up to the present time in this country in systematic trade school training, outside of the work performed in colored and Indian schools and in reformatories.

"Before discussing the work of these schools in detail, it may be well to consider the causes which led to the creation of this new institution and what has been accomplished in its development in the older countries of Europe. Previous to the present century the apprenticeship system was the universally recognized method through which a trade training might be obtained. Under this system, the youth seeking a trade was bound to a master workman for a term of years by a legal instrument called an indenture. By the terms of this instrument the master agreed to receive the apprentice into his household and watch over his moral welfare, as well as to instruct him in all the details of his craft. The youth, on his side, pledged himself to serve the master faithfully during the period of his apprenticeship. This system formed an integral part of the privileges and

practices of the guilds and corporations which arose in Europe during the Middle Ages. At that time the system had a political as well as an industrial significance. To acquire citizenship in a free town it was generally necessary to be a member of one of the recognized guilds, and the entrance into apprenticeship was in consequence in the nature of a first step toward the privileges of free citizenship. The length of the apprenticeship term varied in different countries. In England it was seven years; in France, three or four years, and in Germany, two to four years. The practice as to apprenticeship was codified in England during the reign of Elizabeth and put in the form of a statute. According to this statute no one could lawfully exercise, either as a master or a journeyman, any art or manual occupation except he had been brought up therein seven years at least as an apprentice. Every householder dwelling in a city or free town was empowered to take apprentices, but only those might be taken whose parents possessed a certain fortune.

"While all production remained in the hands of master workmen and his corps of journeymen, this arrangement proved natural and efficient. The number of master workmen was large, and the number of journeymen under a single master was comparatively small, and as the master worked in the shop among the men his relations with his apprentices were direct and intimate. It was, moreover, strongly for the master's interest to instruct and guide the apprentices to a thorough knowledge of their trade that they might return to him as great a profit as possible. But with the invention of the steam engine and the introduction of machinery came a great change in industrial methods. The economic advantage of quantity production and the division of labor appeared, and the master, no longer simply the master craftsman, became the directive head of an industrial establishment. From the master workman he has gradually developed into the manufacturer and the contractor—the household workshop into the factory. No longer working with his own hands, he uses his brain to direct more effectively the hands of many. Under these conditions the old relations between the apprentice and his master have ceased. The former direct association in actual work has disappeared and in the new conditions no provision has been made for systematic instruction of the apprentice. In the modern shop, the time of the workman must be accounted for in actual work. No time is left for the instruction of learners. The foreman, on the other hand, being solely interested in obtaining as much product as possible from his resources regards the apprentice as a burden and a nuisance. The natural result follows, that the few boys who are admitted to the trades are either called upon to perform petty drudgery about the shops or are put at such tasks as can be most readily mastered, and kept upon these for long periods, to the neglect of comprehensive training. Under these conditions the apprentice is left to pick up the practice of his trade by observation and such opportunities as chance and the good nature of his fellow workmen afford. The opportunities for a thorough all round training are extremely rare, and the common result is one-sided and superficial. From the position of a necessary and valuable assistant the apprentice has come to be regarded as a nuisance that few employers care to burden themselves with.

"In our own country, this condition of things has reached a peculiarly aggravated phase. Not only has the development of machinery and the carrying out of industrial operations on a large scale taken place with us to an exceptional degree, but another influence has, for many years, been operating to stamp out what is left of the apprenticeship system. This influence is the attitude of the American labor unions, whose rules to-day amount practically to a prohibition of young men entering the trades. Building upon the sophistry that the highest return to the individual is gained by limiting the number of workers in the trades, and that the highest rate of wages per day is the sole criterion of prosperity, the labor unions have enforced more and more stringent rules against the number of apprentices allowed to each employer, until the proportion has reached an amount absurdly inadequate to supply the labor market.

"Eight years ago, the Journeymen Plumbers' Union of New York City demanded that only one helper be allowed to every four journeymen, instead of one helper to each journeyman, as was the custom. This demand was resisted by the master plumbers, and a strike resulted which continued for six months, occasioning an enormous loss to the men and to the plumbing trade, and which ended with the journeymen returning to work without gaining their object. This 'battle for the boys' attracted very considerable attention at the time, and is particularly noteworthy as being the only instance, as far as is known, in which employers have stood out against the imposition of labor regulations restricting apprentices.

"By the rules of the Bricklayers' Union of Brooklyn, each employer is limited to two apprentices. This rule is strictly enforced, with the exception that a bricklayer's son is allowed to enter a shop which already has two apprentices, in case there is extra work, and is permitted to travel from one employer to another in this way. Each apprentice is required to serve four years. By the common statement of a number of Brooklyn master masons very few employers have apprentices at all, and it was the general estimate of these masters that the total number of apprentices in the whole city at the present time is less than 20, and that the number of bricklayers' sons traveling about in the above mentioned way is about 30. But allowing that every opportunity for apprenticeship was taken advantage of, the situation would still be most serious. The total number of masons working in Brooklyn in 1880 was 2761—the number of employers was 110; the average death rate of persons between 21 and 55 years of age, as gained from the statistics of life insurance companies, is 10.8 per 1000. The normal operation of these conditions, provided that no journeymen entered or left the city, and that all the opportunities for apprenticeship were taken, would result in an annual decrease of journeymen bricklayers, between 21 and 55 years of age, in the city of Brooklyn, of 53. As a matter of fact, of course, no such decrease takes place; but, on the contrary, a large addition is made each year to the workers in this trade in all our large cities. Where does this large increase come from? It comes, as they used to say in New York, 'through Castle Garden.' It comes from the constant influx of foreign workmen, who are immediately received into the unions, derive the benefits of their organizations and ob-

tain a voice in their affairs. This influx has been going on for so long a time and at such a rate, that to day foreign born workmen form a majority of the labor unions in all of our largest cities.

"In 1880 the total number of men engaged in the trades of blacksmithing, mason work, cabinet making, carpentry, machine building, painting and plumbing, in the city of Brooklyn, was 18,487. Of this, 9456 were foreign born. In New York City the total number was 42,498, and the number of foreign born 24,974. It is confessedly the fact that the large bulk of these immigrants are not of the better class of foreign workmen; but, on the contrary, are the poorest, the dregs of the foreign labor market, who have found it impossible to compete with better trained workmen at home and who have come to this country to better their condition. These men, often miserably trained, are at once admitted to the unions without any test of character or ability, the voucher of an acquaintance being the only form required. Brought up in comparative poverty in Europe, and regarding capital as the natural enemy of labor, these men have introduced old world prejudices and narrowness into American labor organizations, until to-day the unions of all our largest cities are unreservedly committed to the practical exclusion of the apprentice and to the principle of trade monopolies.

"Upon the continent of Europe the necessity of some provision better suited than the apprenticeship system to modern industrial conditions has now long been recognized, and the idea of trade schools has there been a familiar one throughout the present century. In Austria, Germany, Switzerland, Belgium and France particularly a large amount of study and experiment has been given to the problem, and in these countries there exist to-day many hundreds of industrial schools. It is necessary, however, to lay considerable emphasis upon the fact that a large proportion of these schools are not in a strict sense true trade schools, but are technical schools. A trade school, considered solely as an instrument to perform the function of the apprenticeship system, is a school designed to prepare handicraftsmen for practical work at a trade. Such a school may or may not include instruction other than manual, but its primary object is manual dexterity. A technical school, on the other hand, is an institution in which, in addition to practical instruction in the methods of a craft, the scientific principles upon which it is founded are thoroughly explained and their bearing upon the operations of the trade clearly demonstrated. Such schools may prepare superior craftsmen fitted to become foremen or superintendents, or they may train designers."

After describing in detail the trade school systems followed in various European countries, Professor Richards drew the following inferences therefrom:

"In any attempt to train men as artisans in a school shop, the greatest difficulty must always be the economic one. In the French schools, as indeed in most of the other European schools, this problem is surmounted by dealing with the pupil before he has reached a commercially valuable age. The pupil is entered at the school at 12 or 13, and leaves it at 15 or 16 years of age. The operation of this plan is attended by the objection that at graduation the pupil is too young to have completely

mastered his trade, and must still serve some years of apprenticeship. Another and greater objection, from an American standpoint, is the fact that it necessitates the selection of a vocation at a time when the pupil is quite too young to make an intelligent choice himself, and when, in consequence, the choice of his life work is either determined by his parents or by boyish inclination. Such a system could only be acceptable in the fixed conditions of society similar to those of continental Europe, where the sons of the artisan class are, as a matter of course, expected to follow the trade of their fathers. In this country, with its opportunities for individual development and belief in individual freedom of choice, such a system would find but little sympathy."

Mr. Richards then traced the history of the New York Trade Schools from their inception and foundation in 1881 by the father of the American trade school movement—the late Col. Richard T. Auchmuty—to their present position of power and usefulness, showing how in their case, and of that of institutions subsequently established on similar lines, the problem has been practically solved. He pointed out that it was not their design to turn out the finished mechanic, but to equip the learner with a fair amount of skill in the varied operations of the trade, together with a thorough grasp of the principles involved, sufficient to fit him at once to become the money earning factor. The economic problem of not encroaching too seriously upon the money earning period of life with the school training was met, he showed, by Col. Auchmuty; first, by means of the evening classes which allowed the students to be engaged in a livelihood occupation during the day; and, second, by reducing the length of day classes to the minimum in which it was felt an efficient preparation for active work could be gained—namely, to three months.

"The trade schools of the Pratt Institute and of the Philadelphia Master Plumbers' Exchange were founded upon the New York schools as a type. At the Pratt Institute a policy obtains in regard to the length of day courses somewhat different from that pursued at the New York schools. In Brooklyn the length of day courses is made nine months, with the idea of giving more extended instruction in the trade school itself, at the cost perhaps of reaching fewer students. The belief is also held that the legitimate function of the evening classes is rather to extend and broaden the training of those entered in the trades than to train beginners. In all of these American institutions the principle obtains of confining the instruction given in the schools to an essentially practical preparation for the trade and to pupils of sufficient age (17 to 25) to learn rapidly, leaving the general education to be gained in the common schools previous to entering.

"This system of trade school training received the indorsement of the National Association of Master Builders in their convention at Cincinnati in 1888. At this meeting resolutions were passed that a lad who wished to enter the building trades should go first to a trade school to learn the science and practice of his trade. When the trade

school course is finished, and he has proved by an examination held by a committee of master mechanics, that he has profited by it, he is to enter a workshop as a 'junior.' When old enough and able to do a full day's work, he is to apply for a second examination, which, if passed, entitles him to be considered a journeyman. This system seems well suited in its essentials to the needs and genius of the pupil of the United States, and destined to develop throughout the country. The only serious obstacle to its progress is the attitude of the labor unions, who oppose the entrance of the trade school graduate into the trade, upon the same ground that they seek to limit the number of apprentices.

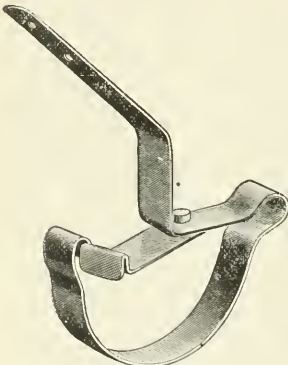
"The short-sighted and inconsistent policy which thus seeks to close to young men all entrance to the trades, and at the same time allows, without protest, the great influx of foreign workmen, needs little comment. It is intrinsically selfish and unnatural, and being such, cannot long continue. The trade school has come to stay. It has come in answer to a great need, and must develop in answer to that need. The right of American youths to enter the trades and to equip themselves in the most economical manner for a livelihood, cannot much longer be gainsaid or set aside. What might under other conditions become the tyranny of a class, cannot long exist beside the free institutions of our country. On the contrary, the true interests of organized labor are to be found, not in futile opposition but in active participation. The opportunity is at hand for the labor organizations of the country to actively influence, and, to a certain extent, direct the trade school movement. By co-operation with the schools, they can do much to realize the highest opportunity for usefulness that is open to them. By selfish and bigoted opposition, they will do much to cripple and narrow their own power. A comprehensive system of trade training suited to the times would involve the recognition of the trade school graduate by the trade organizations of the journeymen, as well as of the masters, and his establishment with a definite place and a definite economic value in the industrial world. Such a system, while effectively preventing the admission of imperfectly trained workmen, would afford ample opportunity to every naturally qualified candidate. An arrangement of this kind would open the doors of the trades to American youth, without requiring the sacrifice of all opportunity for culture that is now demanded. Such an arrangement would mean, to a large extent, the Americanizing of the trades—it would mean the addition to our industrial army of young men who have had the opportunity of a good public school education, and who are fitted to assume the duties of citizenship with intelligence and patriotism, as well as to attain to the highest efficiency in the operation of labor."

President Ingalls of the "Big Four" and Chesapeake & Ohio Railroads, in a recent interview reported in a New York journal, expressed himself as being entirely satisfied with the outlook for his roads. He stated that the business for March has been exceedingly good, and will show a large increase over last year in both gross and net receipts in both systems. Mr. Ingalls mentions that business is particularly good in the small manufacturing towns along the lines of the "Big Four."

ROOFING AND CORNICE.

The Chautauqua Eave Trough Hanger.

The accompanying illustration shows the Chautauqua eave trough hanger made by the Chautauqua Mfg. Company, Mayville, Chautauqua County, N. Y. The particular feature to which the manufacturers allude is that it can be attached to or removed from the trough very quickly. No tools are required, nor are solder, bolts or nuts used in its construction or fastening. In repair work it is said to be particularly convenient and a first class job can be executed without taking the trough down. The hanger presents a neat appearance, and being fastened to the back of the trough, it does not jimmie the bead and is furthermore so constructed that it will in no way check the flow of water. In



The Chautauqua Eave Trough Hanger.

applying this hanger to the trough the hook is caught from the back of the trough and the hanger brought around over the bead, the locking bar being then swung over the top of the trough and under the hook. The hangers are made in all sizes, with $\frac{1}{2}$ -inch and $\frac{3}{4}$ -inch beads.

FLASHINGS.

THE ILLINOIS ROOFING AND SUPPLY COMPANY, 203 Lake street, Chicago, have brought out a handsome 100 page catalogue of their specialties. They are manufacturers and jobbers of steel roofing, corrugated iron, steel brick siding, rock face stone, patent ceilings, metallic shingles, shutters, eave troughs, hangers, conductor pipes, cornices, window caps, finials, &c. The catalogue thoroughly covers the business of roofers' supplies, copious illustrations being given of methods of applying metal roofs and sheet metal work generally. Rules for measurement are printed, as well as complete price-lists.

FRIEDRICH & KELLEY, Holyoke, Mass., have removed their offices from 510 Main street to 480 Main street, and are now using the entire building at the

former address for the manufacture of corrugated conductors and gutters, which are their leading specialties. These are made in 10 foot lengths of extra heavy stock with only one seam, and are put on the market at a low price.

A BLOCK of three stores for E. O. Martin is to be erected at Waterbury, Conn. The building will have galvanized iron cornice, skylights and tin roof.

LANDELL & SKELTON have gone into business at Fayetteville, Ark. They will deal in roofing, guttering, cornice work, &c.

J. M. & L. A. OSBORN, importers and jobbers of tin plate, tinware and tinner's supplies, Cleveland, Ohio, are distributing to the trade a large sized yellow card bearing a gold star in the center and advertising the "Osborn Old Style" guaranteed roofing plates, made specially for this firm. Messrs. Osborn express the belief that they carry the largest assortment of well known brands of roofing plates of any house in the United States.

J. C. McFARLAND, 2511 to 2519 State street, Chicago, has the contract for about 650 squares of slate roofing to be laid on iron purlins and 5 tons of copper work for the tin can factory of Norton Bros., Baltimore, Md.

The Williamson Trade School, Media, Pa.

The second commencement of the Williamson Free School of Mechanical Trades, Media, Pa., took place on Saturday, March 29, when 32 young men, after completing a three years' course of manual training as machinists, bricklayers, carpenters and pattern makers, were given their diplomas. The occasion was made one of special interest by the presence of a number of distinguished persons. The boys, of whom 168 are now receiving instruction in the school, were addressed, among others, by Governor Hastings of Pennsylvania, Ex-Postmaster-General Wanamaker, who is president of the Board of Trustees of the school, Job H. Jackson, president of the Jackson & Sharp Company, Wilmington, Del., and representatives of the Philadelphia Master Plumbers' Exchange, as well as members of one or two trade unions. The Williamson School is now firmly established on the lines laid out by its founder, the late Isaiah B. Williamson, and it has turned out a number of well-trained and efficient mechanics. Its condition is reported to be in every respect satisfactory. The trustees have established the school on a broad and liberal basis; and the boys, who all live at the institution, are there sur-

rounded by the best influences, and in every way fitted to start on a useful industrial career under the best auspices.

Trade Notes.

THE decoration on the back of the advertising letters sent out by the Joseph Dixon Crucible Company, Jersey City, N. J., this month shows a bird's-eye view of a line of umbrellas, typical of the showery month of April, the calendar for which is at one side.

THE FRANKLIN MFG. COMPANY have been chartered at Austin, Texas, with a capital of \$50,000 to manufacture pumps, &c.

THE KEENE LANTERN COMPANY were formed at Waterville, Maine, last week, with a capital stock of \$46,000. W. L. Keene being president and W. F. Brown treasurer.

AN ADDITION is to be built to the enameling department of the Eastern Tinware shops, at Portland, Conn. The new building will be 40 x 70 feet.

ON APRIL 2, Judge Dallas, in the United States Supreme Court, Philadelphia, appointed the Girard Life Insurance, Annuity & Trust Company of Philadelphia a receiver to take charge of the property in the State of Pennsylvania of the McCullough Iron Company of Delaware. There are said to be about \$45,000 worth of assets of the company in the State of Pennsylvania. The Girard Trust Company, in connection with Henry Whitley, are already receivers for the property of the McCullough Iron Company in Delaware and Maryland.

THE CONSHOHOCKEN GALVANIZING COMPANY of Conshohocken, Pa., were incorporated at Harrisburg, Pa., this week, with a capital of \$30,000. The incorporators are James E. Salter, Philadelphia, Jawood Lukens, Jesse L. Heywood, A. L. Murphy, Henry M. Tracy and Lewis N. Lukens.

J. M. & L. A. OSBORN, Cleveland, Ohio, publish a sheet iron list that they will be glad to send to the trade on application. The list relates to their Juniata galvanized iron and cold rolled steel; also black sheet iron and soft steel sheets. On the back of the circular is a serviceable table giving the weights of sheet iron per square foot, both black and galvanized; the number of sheets generally placed in bundles of galvanized iron and the square feet per sheet. The trade will find it a convenient reference card.

WILLIAM HIGHTON & SONS of 55 Charlestown street, Boston, Mass., and 40 Otterston street, Nashua, N. H., have issued a catalogue and price list relating to the lines of hot air registers, ventilators, &c., which they are prepared to supply at short notice. The pamphlet consists of 28 pages, neatly printed on good paper and bound in colored paper covers. In offering this price list to the trade the firm request that all old lists be destroyed, as the present edi-

tion contains changes in prices and many additional sizes and designs, to which attention is invited. A feature of the publication is found in several colored pages which are introduced to as to show to better advantage the designs finished in gold bronze, electro bronze, copper bronze, silver bronze, electro copper plate and nickel plate. The assortment of goods to which reference is made covers a wide range and the catalogue will doubtless prove of interest to many in the trade.

IT IS REPORTED that the Star Iron Works of Lindsay & McCutcheon, Allegheny, Pa., where Muck Bar has been the exclusive product for some years, will be turned into a plant for the manufacture of Iron and Steel Sheets.

THE CHICAGO STAMPING COMPANY, Chicago, report that the sales of their Seamless Neck Milk Can stock have been far beyond their expectation.

THE TROY SHEET METAL COMPANY of Troy, N. Y., have been incorporated, with a capital of \$15,000, to manufacture, purchase, sell and repair articles made of sheet metal. Directors: Jessie D. Ennis and Robt. J. Wylie of Troy and F. H. Knox of Lansingburg.

THE NUBIAN IRON ENAMEL COMPANY, Cragin, Ill., will shortly be succeeded by a new corporation styled the Nubian Iron Enamel & Varnish Company, with a capital stock of \$50,000. They will continue the manufacture of Bonnell's Blacks, which have established for themselves an enviable reputation.

The new Galvanized Iron and Steel Association in England have formed an alliance with the black sheet manufacturers of that country, under the terms of which the members agree to trade only with each other, no outsiders being admitted to the receipt of orders for black sheets from the galvanizers, while, on the other hand, the sheet iron manufacturers engage to supply only such galvanizers as are in the alliance, with raw material. By a code of iron bound rules the alliance is to be a close corporation, the object, as stated, being the benefit of both branches of the trade. One significant proviso in the arrangement is that those galvanizers who roll their own sheets are to be prevented, so long as the alliance holds good, from further extending their rolling mill plants.

The agitation for better sanitary conditions in bake shops which has been going on in several large cities of this country is being shared on the other side of the water. The Operative Bakers of England have taken the matter up and have presented the evil to the local authorities in various parts to such good effect that in the case of the British metropolis the London County Council are about to introduce a system of licensing the bake houses, which is directed to the extinction of the basement bakeries which have been proved in both countries to be a prolific source of disease and contagion, as well as being dangerous to those working in them.

Some of the leading manufacturers of the State of Georgia are endeavoring to form an organization, to be known as the Georgia Manufacturers' Association, with the object of forwarding the industrial interests of that section.

Latest advices from Cuba indicate that the insurrection is spreading and that the insurgents are gaining force.

New York Trade School.

Fourteenth Annual Commencement.

The annual commencement exercises of the New York Trade School were held in the school auditorium at Sixty-seventh street and First avenue on Thursday evening, April 4. The hall was handsomely decorated and an enthusiastic audience numbering about 300 were present, among whom were a great many ladies. There were also present nearly 300 pupils. Notable among the audience were ex-Mayor Abram S. Hewitt, President R. Fulton Cutting, Chas. J. Gillis, James Curran, E. D. Smith, S. J. Geoghegan, J. L. Wells, E. Murphy, W. J. McDermott, Col. Geo. D. Scott, John Yule, S. E. Dibble, Thomas McNeill, T. J. Tuomey, James Muir, Frank Reynolds and J. Pierpont Morgan, Jr., A. K. Mackay and representatives of the various trades taught at the school.

The Yell of '95.

The audience, after inspecting the work of the young mechanics, had hardly become seated when they were greeted with the yell of the Class of '95.

Sizzle! Sizzle! Razzle! Dazzle!
Sis! Boom! Rah! New York Trade School.
Rah! Rah! Rah!

The boys all wore the Trade School colors, a strip of royal purple ribbon, and many wore the badge adopted by the trustees, which is a 1/4 inch silver circle, with a dark background with the letters N. Y. T. S. and the date 1895 around the edge, with the right arm of a mechanic holding a hammer in the center. Immediately after the yell President Cutting greeted the guests and said that the exercises would begin at once, and he introduced Lewis Hopner, president of the New York Association of Master Painters and Decorators.

Address of Lewis Hopner.

The short address by Mr. Hopner was attentively listened to and was in part as follows: "We meet to night for mutual benefit and pleasure, and to give you, young men, an incentive to perfect yourselves in your trades, that you may be entitled to a reasonable compensation for your work. Have patience, perseverance and prudence and earn that success which commends itself to your own conscience. I caution you against the know all mechanic. Beware of them, they have a great faculty for ignorance. No man knows it all and you have a vast deal to learn. I would say in closing that, as the painter labors where there are ladies and children, and when their protector is away, always be gentlemen."

Mr. Cutting then introduced Edward Murphy, saying: "I now have the pleasure of introducing one of the best friends the school ever had."

Address of Edward Murphy.

Among other things Mr. Murphy said: "Something over 14 years ago I was taken into the confidence of Colonel Auchmuty, whose deep interest in the welfare of young men is manifested in the establishment of this institution, where you men are helped to an honorable independence by being taught the means of earning a livelihood. This school opened 14 years ago with but 30 pupils, but since that time 5250 have passed its portals possessed of a certificate showing that they had mastered the principles of a trade and were ready to increase their value by practice. The

value of a trade was considered by Colonel Auchmuty as equal to the income from \$30,000 invested in Government bonds, and it only requires simple multiplication to show that the graduates of this institution represent a capital of millions of dollars."

Mr. Murphy then congratulated the plumbing class on the skill shown by their work and wished all success in their lives.

President Cutting next announced that the certificates would be presented. John H. McCullagh presented certificates to 31 carpenters and John Noll presented certificates to 40 painters and decorators.

The Allison Medal.

A medal furnished by W. H. Allison is presented every year to the pupil who has shown the greatest proficiency in the painting class, and this year it was awarded to John L. Looock, St. Thomas, Canada. Certificates were presented to 18 young bricklayers by Erskine Van Houten. President Cutting, in behalf of this class, presented to their instructor, Thomas Carey, a handsome pipe, which he received with a neat speech, inspiring the young men to never be discouraged and become idle, but as soon as one job was finished to keep working in hunting for another.

James Hughes presented certificates to 24 blacksmiths, T. J. Tuomey presented certificates to 43 plumbers from the evening class, and James Muir to 93 plumbers from the day class. President Cutting, in behalf of the day plumbing class, presented all umbrellas to Superintendent John Delehanty and instructors John McMenamy, Rutherford Clark, Thomas Kelly, J. J. Lynch and T. B. Walsley, and Mr. Delehanty thanked the class in behalf of the instructors, stating that he regretted to be separated from the boys who had become dear to him and that they might still consider him their preceptor when they met perplexing problems. Chas. J. Gillis then presented certificates to 6 printers and 13 steam fitters. When the presentation of certificates was ended President Cutting introduced the Hon. Abram S. Hewitt, ex Mayor of New York.

Address of Abram S. Hewitt.

The following is a brief summary of Mr. Hewitt's remarks: "I owe the pleasure of being here to night on this interesting, instructive and hilarious occasion to an accident that occurred to prevent me attending a year ago. When I heard the call of the roll of those who had received diplomas, and the place of residence assigned to each, I might well have imagined that I was listening to a roll call in the House of Representatives. The illusion might have been perfect had those who come up for their diplomas not borne evidence of a higher order of intelligence. Mr. Cutting no doubt invited me to speak thinking that I had a large experience to draw from, so I take the liberty to be reminiscent, for one of the privileges of old age is garrulity, as my friend Mr. Muir can testify, though I do not wish to be understood to imply that Mr. Muir is garrulous. I am delighted to be once more in the circle of millionaires, Muir, Cutting and Tuomey, and have noticed that all of the umbrellas presented have hooked handles, which I presume is for raking things in."

Mr. Hewitt spoke of the early apprenticeship system and of the control over workman tyrannically held by the guilds previous to the French Revolu-

lution, when their power perished. This was a revelation, liberating the workman, and the result soon seen was the steam engine and the progress that has made our modern world. It was said in his early days that a young man had gained his freedom when he had finished his apprenticeship, but how much more was this true of his hearers who enjoyed the liberty to exercise their right to labor wherever it was offered. It has brought about a co-operation so broad that its glory crowns the nineteenth century.

"If you ask whether it is the right of the workmen to associate together for the general welfare, and to increase the rate of labor, then I say yes. It is not only their right, but their duty. But it is when the trades union steps beyond the pale of the law, and assumes the right to compel or prevent labor, that it violates the fundamental principle of human liberty and Christianity. So also has the employer the right to combine with others, but when he oversteps the law, then he has violated the principles upon which the Constitution rests. But I see the dawn of harmony between the employer and the employee. When that time comes questions will be discussed and considered by honest men. The workman will not be deprived of his individual liberty. These late disturbances are among the last, and the time is at hand when there will be absolute equality to every man who breathes beneath the flag of the Union."

Address of R. Fulton Cutting.

The following is a brief report of Mr. Cutting's address: "You have been here a season and are going out tradesmen. You have gained a great deal and we want to gain something. We want to hear from your employers that you are not only workmen but men of honesty and integrity, not tradesmen but trades men. We want to hear that you give an honest day's labor for your wages. Don't join a trades union just to get work and wages. If you do join, join to elevate it, to make it the aristocracy of trade workers in intelligence, ability and integrity. Don't be satisfied with mediocrity and one wage for all, strive for the aristocracy of dignified labor. Now I wish you all success. You know how to work and how to live. I bid you all good night."

Graduates in Day Plumbing Class, 1895.

William Bailly, New York City.
William H. Bailey, Jr., Troy, N. Y.
Howard Baxter, Gloversville, N. Y.
Samuel Berla, Newark, N. J.
William Bramhall, S. Deerfield, Mass.
William Biggs, Wellsboro, Pa.
Charles E. Birch, New York City.
John H. Lawrence, Corning, N. Y.
Thomas McKenzie, Brooklyn, N. Y.
Ernest F. Ziegler, Waterbury, Conn.
George J. Schaaf, Union Hill, N. J.
Charles F. Kortright, Florida, N. Y.
James A. Switzer, New York City.
Lewis Hoxley, Honesdale, Pa.
Fred, E. Talbot, Crown Point, N. Y.
Charles H. Matthes, Lyons, N. Y.
Joseph P. Sieger, Coplay, Pa.
Richard D. Turner, New York City.
Elbert Hallett, Flushing, N. Y.
C. Elmer Dibble, New Haven, Conn.
Alfred H. Howe, New York City.
William D. Williams, Litchfield, Conn.
William D. Weaver, Berrian Springs, Mich.
Charles H. Whittier, Melrose, Mass.
Louis J. Cherrier, Franklin Falls, N. H.
Edward Meyers, Mount Vernon, N. Y.
William F. Spokehead, Plymouth, N. H.
Edwin H. Klein, Milford, Pa.
Oscar P. Smith, North Billerica, Mass.
Fred, N. Stout, Forty Fort, Pa.
Charles P. Crosby, Bowman Creek, Pa.
Harry E. Kotcamp, York, Pa.
Samuel Paul, Jr., Stoughton, Mass.
Frank W. Smith, Norwich, N. Y.

William C. K. Smith, Lisbon, N. D.
William H. Mabie, Newburg, N. Y.
Frank A. Chford, Shamokin, Pa.
Edward Greenhalgh, Blossburg, Pa.
Richard J. Conety, Jr., Mountain Top, Pa.
Frank Troy, New York City.
James D. Sturton, Portage La Prairie, Manitoba, Canada.
Eugene Smith, Westwood, N. J.
James McMillan, Carbondale, Pa.
Louis F. Luderbach, Jr., New Orleans, La.
Albert A. Marshall, Old Saybrook, Conn.
Charles L. Holt, Lawrence, Mass.
Charles M. Maloney, Hughesville, Pa.
Harry P. Goodwin, N. Marshfield, Mass.
William O'Connell, Grand Haven, Mich.
Alfred Leech, Los Angeles, Cal.
Frank W. Fuller, Gorham, N. H.
John E. Dugan, Albany, N. Y.
Charles T. Congdon, Lowell, Mass.
Omar J. Hotaling, Johnston, N. Y.
George S. Hickey, Bethel, Me.
Fred, M. White, Nashua, N. H.
Charles F. Holmes, S. Hadley Falls, Mass.
Eugene W. Goss, Auburn, Maine.
Fred W. Herrmann, Newark, N. J.
George H. Playter, New York City.
Reuben C. Keeler, Litchfield, Conn.
C. Knicker.
John J. Stansfield, Brooklyn, N. Y.
Andrew Coffey, Charleston, Va.
Francis C. Barnes, Jr., Jersey City, N. J.
Peter H. Wilson, Litchfield, Conn.
John H. Mulligan, Vickburg, Miss.
William Heaney, New York, N. Y.
Charles H. Gebhart, Charleston, W. Va.
George W. Malcolm, Pittsfield, Mass.
Andrew Miller, Schenectady, N. Y.
Fred O'Connor, West Bridgewater, Mass.
James G. Barnes, Curtisville, Mass.
Aug. A. Brandes, Newark, N. J.
Vincent H. Brady, New York City.
George Baumann, Jr., Newark, N. J.
Havelock Erskine, Winchester, Mass.
Wade S. Knecht, Easton, Pa.
Charles F. Bell, Swanton, Vt.
James H. Mahoney, New Bedford, Mass.
Charles A. Kirby, Harrisburg, Pa.
Thomas A. Gabb, Cummington, Mass.
John Denby, Lawrence, Mass.
William Pearson, Keene, N. H.
Edward E. Trecartin, Lubec, Maine.
William J. Rees, Peckville, Pa.
Henry T. Garlick, Montreal, Canada.
Otto Laursen, Vancouver, Canada.
Cornelius J. Griffin, Brooklyn, N. Y.
William H. Schwegler, New York City.
Louis Hyams, New York City.
Chester T. Baban, New York City.
John J. Sullivan, Astoria, L. I.
Ulysses N. Robbins, Northport, L. I.

Graduates in Day Steam and Hot Water Heating Class, 1895.

Paul Mueller, Milwaukee, Wis.
J. H. Ward, East Orange, N. J.
Arthur S. Ingersoll, Beverly, Mass.
Herbert L. Moore, Cambridge, Mass.
Charles E. Scudder, Binghamton, N. Y.
Alfred D. Conant, Plainfield, N. J.
William H. Kroepeke, New York City.
Rudolf Ewald, Jersey City, N. J.
Jacob J. Keller, New York City.
Geo. H. Brown, Chicago, Ill.

SCOTT'S EXTRA COATED brand of roofing plate is the subject of a neatly printed circular in red and blue received from Follansbee Bros. Company, successors to James B. Scott & Co., Pittsburgh, Pa. Attention is called thereby to the special merits claimed for this well-known plate, which, it is said, carries the largest proportion of pure block tin possible, and is made by the palm oil process without the aid of acid flux. As a test of the validity of this claim, it is stated that only rosin need be used when soldering the plate.

SAYS the *Iron and Steel Trades Journal* of London: "The tin plate works, including black plate mills, either erected or in course of erection in the United States, are already more than sufficient to supply the whole of the American market, and there is danger of overproduction. Still the shipments from Swazee and L. verpool to American ports show signs of improvement; and, looking at our export returns, we wonder what becomes of all the plates made in America."

(Continued from page 38.)

part of the purchasers in the existing condition of the tin plate industry of South Wales.

THE New York office and warehouse of Merchant & Co., Incorporated, which is under the management of C. H. Bolks, Jr., was transferred this week from its old location at 247 Pearl street to 245-247 Water street, where a five-story building has been leased, affording considerably more commodious quarters, and enabling the firm to carry larger stocks of goods to meet the requirements of their customers.

THE WHITAKER IRON COMPANY, Wheeling, W. Va., have started up four sheet mills, which have been idle for the past few weeks.

A DISPATCH from Cumberland, Md., refers to the likelihood of the Coates of Baltimore, who until recently operated the tin plate mill at Locust Point, starting a similar works at Cumberland.

A NEW TIN PLATE MILL is spoken of at Bellefonte, Pa., as likely to be located in that town under the auspices of ex-Governor Beaver of Pennsylvania.

THE JAMES McDONALD & SONS COMPANY, Cincinnati, O., are working on double turn at their tin plate works in that city. The company have two tinning sets in operation and are producing two grades of roofing plate, with which, they state, they have achieved good success in the market.

THE LEECHBURG FOUNDRY & MACHINE COMPANY, Lechburg, Pa., have shipped a Mesta patent pickling machine, crates, vats and other appliances to the Crescent Sheet & Tin Plate Company, Cleveland, Ohio.

THE PONTYMISTER TIN PLATE WORKS, Newport, Monmouthshire, one of the largest in the British tin plate trade, were closed down last week.

THE STRUTHERS IRON & STEEL COMPANY, Youngstown, Ohio, have been granted a charter of incorporation, with a capital stock of \$50,000. The new concern are composed largely of Youngstown capitalists, Jonathan Warner of Niles, Ohio, being general manager. The concern have recently purchased the Summers Iron Works, formerly operated by Summers Brothers & Co., at Struthers, Ohio, and propose to engage in the manufacture of iron bars, sheet bars and iron and steel sheets.

WORK has been begun on the additions to be built to the New Castle Steel & Tin Plate Mill.

A BROOKLYN JOURNAL makes the remarkable statement that there are now no less than 166 tin plate works built, or building, in this country. The difference between tin mills and tin plate works is evidently not clear to the average journalistic comprehension. If 166 tin plate works were actually in existence in the United States manufacturers might well cry out at the danger of overproduction.

THE offices of the Duquesne Tin Plate Works, have been removed from Lewis Block to rooms 909-910 Carnegie Building, Pittsburgh, Pa.

A TEST was made on Wednesday of the machinery at the recently erected tin plate plant of the Pennsylvania Tin Plate Company, New Kensington, Pa. Everything is reported to have worked admirably. The company expect to be producing plates next month.

STOVE TRADE NOTES.

The Furnace Trade.

The sudden rise to popularity of steam and hot water heating and the extent to which these systems have been introduced during the past few years have, in the minds of some, clouded the fact that hot air furnaces are still manufactured. Judging from the conversation of some heating engineers one would suppose that hot air furnaces were things of the dark ages, and that the only business done in them now was in the way of repairs and in very insignificant work. We do not mean to say that this impression is at all general or obtains among those who keep themselves familiar with the heating trade, but every one is aware that there are some enthusiasts who, in their advocacy of steam and hot water, have quite lost sight of the fact that the business in hot air furnaces is enormous in extent and constantly growing. With a view to gathering some particulars about this important industry, we have inquired of manufacturers to ascertain their opinions upon the present growth, its tendencies, the trade as compared with the recent past and what the future of the business is likely to be. What follows is a summary, partly in the form of quoted extracts from replies of our correspondents and partly made up from the opinions dispersed through their different letters. It will, we believe, reflect, with a fair degree of accuracy, the prevailing opinion of the trade, for the correspondents from whom we quote are important representatives and are scattered over all the country; that is, over so much of it as contains foundries where hot air furnaces are made.

Furnace Material.

Every one who follows the furnace trade or familiarizes himself with the changing product in this department is aware of the partial substitution of wrought metal—that is, wrought iron, or, in the present day, steel in place of cast iron. The two metals—wrought iron and cast iron—are used in all sorts of combinations, and we have furnaces made of all cast iron or all wrought iron and of the two combined in varying proportions. There seems to be a tendency to employ the wrought metal, but we have been greatly surprised at the unanimity of opinion respecting the future of the cast iron furnace. Never mind how much the particular manufacturer favored wrought metal, hardly a single one expressed the belief that wrought iron or steel was ultimately to prevail in this department of manufacture. They recognized its usefulness,

pointed out its merits and also its defects, but at the same time they believed that cast iron has certain qualities that will always insure its partial use.

Competition of Steam and Hot Water.

We think a couple of years ago rather more than at present there was a firm belief in the further rise and final ascendancy of steam and hot water heating for both public and private buildings. As these newer systems, however, are being closely studied and compared on their merits with hot air furnace heating, it is recognized that steam and water have their appropriate fields, and leaving out the prejudices of individual house owners, who will prefer one or the other system irrespective of the merits particularly adapting it to the building in question, the tendency seems to be to establish such apparatus as will give the most beneficial results for the least outlay. Whatever competition exists between these systems and hot air is probably most emphasized in the case of hot water boilers. The steam heating systems have found most favor in the larger buildings, and the relative popularity of hot water heaters has been in dwelling houses where they would come more directly in competition with furnaces; or perhaps it would make it clearer to explain that steam for large work is not a thing of yesterday, but has been used for years, while hot water is a more recent system of heating. One of our correspondents in speaking of this matter says:

We do not think that steam boilers affect the sales of furnaces in our part of the country to any extent. There are some special localities where they do. Hot water boilers, however, come in competition to a greater extent, but relatively there has been an increase in the sales of furnaces during the last two years.

Another prominent manufacturer is even more definite in his statement and says: "Hot water affects the furnace trade in new dwellings of the \$1500 class and up, and the same applies to steam."

Another Eastern manufacturer writes: "Steam and hot water boilers are used only in large dwellings and public institutions and affect the sale of very large sizes of hot air furnaces. The effect, however, is not noticeable in the sale of furnaces smaller than 40 inches."

We have one rather emphatic communication on the subject that illustrates the extreme views of the hot air furnace advocates. Our correspondent writes:

Steam and hot water heating is a fad at present for low cost contracts, and

cuts into the sales of hot air furnaces; but better results, better quality of air and also less cost of management can be obtained with hot air for large dwellings. They are also more economical in small public buildings which are only open part of the week. Another point to bear in mind is the cost of repairing damages to plant and buildings from faulty management, which will favor hot air heating in the future. We find a growing demand for the better class of furnace work.

Combination Heating.

There have been those in the furnace trade, and we believe there still are some who have the greatest faith in the future of combination heating. They begin by saying that the hot air furnace is the proper style of heater, then admit that it is difficult to carry the air to distant points of a house and force it against the direction of prevailing winds. This is all overcome, they claim, by the use of a coil or other attachment which furnishes steam or hot water. This attachment permits the heating of the most distant rooms or apartments, and in the eyes of its friends is the most perfect heating system. We are somewhat surprised, however, to find that the opinion of many of our correspondents was adverse to the combination system, and fully half the replies that we received showed that the writers did not put much faith in the future of combination heating. Others, however, were great believers in this system, as for instance one large manufacturer who writes:

"There is no doubt of the future of combination heating. It is destined, in our judgment, to be the most acceptable form of heating in the larger and finer class of dwellings."

On the other hand, an equally prominent firm write:

We do not believe in the future of combination heating. The sale of this construction has materially decreased. As a rule they have given poor satisfaction. It is hard to balance the job, there is either too much hot water or steam and too little hot air, or vice versa. This fault in the system causes just complaint and we expect soon to see the end of it.

Another skeptic writes:

The combination system is an attempt to get all the benefits at the lowest cost and is not a success—for the owner—at present. They are of course good for the maker to sell, but are bad in construction, too complicated for the result reached, not durable, and if not much improved, short lived.

Extending Use of Furnaces.

The most gratifying thing about all the answers we have received and which surpasses even our anticipations is the

almost universal testimony that is borne to the increasing use of hot air furnaces in the smaller houses. Not only are they coming into employment in the smaller suburban residences and town dwellings, but what is more significant, they are going into the decidedly rural districts and into the farming country. Apart from the general advance that is taking place in the standard of comfort, and which would explain in large measure the introduction of furnaces in places where a few years ago it would not have been supposed possible to have sold them there has also to be borne in mind the facts that fire wood is not as plentiful a material as it was some years ago and that coal is dispossessing wood, and with the newer fuel comes the newer apparatus for burning it. One correspondent, writing from Illinois, says:

In this section farmers are just beginning to appreciate the furnace heating system. We have put in several jobs for them and find that they have generally a better appreciation of a good thing than people in towns, and yet we doubt if more than one farm in a hundred in Illinois or Iowa can boast of a furnace.

A manufacturer in Ohio writes: "There is a very noticeable increase in the demand for furnaces from farmers and townspeople. We have a furnace especially for this trade and have been surprised at the remarkable demand for it."

A manufacturer located in Pennsylvania writes: "We erected over 60 furnaces last season in the extreme back country, far from railroads, and in places where we would have thought that furnaces were practically unknown."

Of course this increasing use of furnaces is having its effect upon the stove trade, and theoretically one furnace means the displacement of several heating stoves. This is touched upon in a communication from a New York manufacturer, who says: "It is not an exception to sell five or ten furnaces in small towns where several years ago furnaces were unknown. These sales have cut into the stove trade very much in large towns and cities."

Furnace Statistics.

Together with the information referred to, our correspondents have in many cases furnished us statistics of their trade in furnaces during the past five years, and it is quite remarkable to note the similarity of increase and decrease. Beginning with 1890, the smallest year, 1891 showed a considerable increase, 1892 much larger increase, 1893 a decline, and 1894 a further decline, going back to about the same figures as 1891. We have taken all the figures and averaged them, and then reduced them to the basis of 100 for the year 1890. According to this calculation for every 100 furnaces sold in 1890 there were 105

sold in 1891, 120 sold in 1892, 119 sold in 1893, and 106 sold in 1894.

The general stagnation prevailing in business circles last year is a sufficient explanation of the decline in the trade in furnaces. It has also been said, however, that there is an over supply of buildings, and this with a consequent depression in the building trade will prevent an increase in the furnace trade this year. It is doubtful, however, if this opinion will be the prevailing idea of the trade, and it represents rather, we believe, the condition of things in one section.

The New England Stove Trade.

A comparison of the business of the first three months of 1895 with the same period of 1894 shows that the stove trade in New England is on the whole a trifle better. The business of the months of January and February was considerably larger, but the month of March was dull enough to almost offset the gain of the preceding months. Weather conditions have been unfavorable for building operations, and this undoubtedly has retarded the demand for ranges and furnaces. Much building, however, is projected for the early summer; in fact, architects say that this year is likely to be a better building year in this vicinity than any since 1892. Competition does not seem to be sharper than heretofore and prices are fairly well maintained. Reports of collections vary, but the general view of this important feature of the business shows it to be as satisfactory as can be expected under existing circumstances.

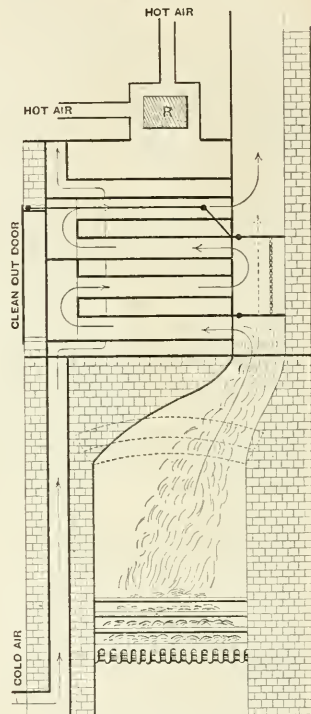
Jobbers of refrigerators and oil and vapor stoves have received some good orders, as most of the retail dealers have laid in their first stocks. These are supposed to hardly cover the season's requirements and duplicate orders are expected when trade opens. The demand for the lower grades of heaters seems to be far in excess of that for higher priced lines. The furnace trade is dull, but the outlook is regarded as favorable owing to the good prospects for building, as noted above. Competition in this line is keen, but the standard makes are held quite firmly, in some cases by means of a cheaper article which is put out to act as a sort of protector to the higher priced goods and sold to those who insist upon an extremely low figure.

THE J. H. McLAIN COMPANY of Canton, Ohio, refer to their Oxford perfect blast furnace as possessing a number of features which should commend it to the attention of all thoughtful and wideawake dealers. The claim is made that the furnace "utilizes indirect currents, increasing the heating capacity fully 25 per cent." Every part exposed to the fire is of high grade gray iron casting and there are no sheet metal joints. The heater is so arranged, it is stated, that it can be changed from a soft coal to a hard coal burner in ten

minutes, at a cost of a few cents. The makers refer to the Oxford as "the most efficient, the most economical and the most durable furnace built."

The Phillips Sanitary Grate.

The illustration herewith shows the Phillips sanitary grate, patented by Geo. Phillips and manufactured by the British Columbia Iron Works, Limited, Vancouver, B. C. The device consists of a square steel box arranged in the fire place above the grate proper. In the box are a series of tubes through which the products of combustion are made to pass before escaping to the chamber. By an arrangement of damp-



The Phillips Sanitary Grate.

ers they may be made to travel through a) or a part of the tubes, as desired; or a direct draft may be opened. The chamber in which the tubes are confined is provided with an opening to receive cold air from the outside, and from the top of the chamber openings are arranged by which the heated air may be delivered in the same room, carried to an upper room or to a room adjoining that in which the grate is placed. It is stated that the grate brings as much air into the building as it takes out, providing for an influx of fresh air to replace the air which has become foul and is carried away by the grate. It is claimed that a large saving in fuel is effected by extracting the principal part of the heat from the products of combustion before they make their escape and that the grate will heat several rooms, according to their size. While the device is adapted for use in connection with any open grate, a special grate is manufactured by the company for use in connection

with it which is very attractive in appearance and arranged with adjustable blower. It is claimed that one of these grates has heated a room 24 x 80 with a 12 foot ceiling to 70° in the city where it was manufactured.

Oven Door Handle.

W. W. Shoe, 428 Walnut street, Philadelphia, is putting on the market the handle shown in the accompanying cut for use on oven doors. It is made of two concave strips of steel drawn to sockets at the lower end and fastened at the upper end with a steel cap. The whole is nickel plated and polished, which adds considerably to its appearance. The maker claims that it is cool



Oven Door Handle.

to the touch on the hottest oven door and enables an operator at all times to open an oven door without danger.

Gas Hot Plates.

Buyers of gas hot plates will no doubt note the change in the construction of the goods which are being pushed the strongest this year. There has been a tendency in this, as in many other lines, to make price the all-essential and attracting feature, and little effort has been made toward improvement generally; yet the hot plate has filled a very important place in kitchen service and has been a source of much comfort. The defects that have been discovered are so universal that the sales have not grown in the proportion that had been expected. This year a better class of burner is being presented, and a careful effort is being made to secure the best possible combustion and a high efficiency with a low consumption of gas. It has been noticed that burners of the better grade of construction are less troublesome about lighting back when used with gas of different quality and under different pressure, and it is claimed that some of the stoves now offered give all concerned far less trouble on this account. It was premised by the manufacturers that the gas hot plate would be used on top of the kitchen stove, where a considerable heat reflected down would be no disadvantage;

in practice, however, this is not generally so. The advantage of good light on the cooking and the comfort of air to the cook have brought the hot plate into use on a table near the window, and the intense heat which is reflected down has been found a serious annoyance. Many of the new hot plates are provided with what might be termed long legs, which raises the burners high enough for a good circulation of air underneath them.

ODD PLATES.

THE WOLFF GAS RADIATOR MFG. COMPANY, 164 Franklin street, New York, are bringing out a new gas hot plate with two and three burners. The top is made perforated, so that the heat of the flames may pass up and around the cooking utensils, and is perfectly flat, so that the vessels may be moved from one part of the stove to another without obstruction. The burners are provided with an adjustable air mixer.

THE WALKER & PRATT MFG. COMPANY, Boston, Mass., have changed the name of their entire line of ranges to Crawford, and added to their assortment a new range called the Gem Crawford. They now offer the Crawford ranges in the Grand, Columbian, Art, Gem and 1885 styles.

THE RIDGWAY FURNACE COMPANY, manufacturers of the Ridgway revolving open fire pot furnaces, have removed from 76 North street to 6 Portland street, Boston, Mass., where they occupy about 5000 feet of floor space in a building recently erected. This change affords them ample and convenient offices, a light showroom and storage capacity for carrying furnaces for immediate shipment. In connection with this they have a complete tin shop. Their foundry is located at Foxboro, Mass., where preparations are being made to produce a larger output than ever before, and the general policy of the company will be to extend their field with the trade at large. This concern have recently been reorganized, with Charles L. Ridgway, president; Edward T. Saxe, treasurer, and Charles J. Ridgway, secretary. Mr. Saxe, who recently became connected with the company, has had large experience in manufacturing, as an executive officer in another corporation in the metal line.

THE MARCH - BROWNACK STOVE COMPANY, Pottstown, Pa., are calling attention to the new open fire place grate recently introduced by them. It is known as the Art Franklin and is designed for service in halls, dwellings, libraries, dining, sitting and other rooms, and embodies an arrangement for heating overhead rooms. A feature in the construction of the grate is the arrangement of the blower, which allows of the fire being raked with the blower in position, thus making the grate both gas and dust tight. The draft is said to be under perfect control and the grate may be closed with the blower at night, insuring protection from fire and keeping the fire until morning. The shaker is used to remove the blower, the danger of burned fingers thus being obviated. The grate bars are of the oscillating type, therefore a poker is not necessary. The grate is adapted to the burning of hard and soft coal, wood or natural gas. The grate being a ventilator as well as a heater should meet with a good reception at the hands of dealers.

THE RICHARDSON & BOYNTON COMPANY, 234 Water street, New York, have placed at the front of their sample room a new range which they manufacture under the name of Perfect. The range is adapted to the building trade where something cheaper than their well-known Perfect range is required. This range is adapted to the use of a horizontal boiler lying across the top of a warming shelf and connected with a water back in the fire chamber. The range will set in between 33 inch jambs and has six holes on the top with a reversible long center. The range has an oven 16 x 17 inches and 10 inches high. It presents an attractive appearance, the castings being of fine finish, while the letters cast on the oven door forming the name are brightly polished. Below the oven door is a nickel plated oven shelf and the broiler door is also polished and nickel plated.

THE PERRY STOVE COMPANY, 242 Water street, New York, are issuing their new Champion hot plate, which presents some novel features. The top is perfectly level and is perforated, so that a vessel 11 inches in diameter may be used without smothering the gas flame. A central perforated plate 8 inches in diameter is arranged to be readily removed. The top is supported on high feet, placing the burners at a considerable height above whatever the hot plate may rest upon. Excellent combustion is claimed for the burner, which is provided with an adjustable air mixer which may be set when the proper proportion of air has been determined by experiment. Another feature of the burner is that it is made so that it is easily removed from the stove; and the parts are made separable, so that should it become clogged through accident or carelessness, the burner may be scalded, boiled or cleaned as the cook prefers.

WM. KERBY, 4 Peck slip, New York, has secured the store at No. 6, and has enlarged his office and sample room to that extent. He is now showing a line of the Reliable gas ranges, and is also showing the Royal Excelsior portable ranges, which are made in several different styles and sizes. Some of the conveniences are water back, end ash pit, enameled reservoir, which has a faucet for drawing off water, a high shelf with brackets and high hot closet.

THE CENTRAL OILGAS STOVE COMPANY are issuing a 96-page catalogue of their gas and oil heating and cooking appliances. The first 20 pages are devoted to various kinds of lamp oil stoves for cooking and heating. The next 30 pages are devoted to their Oilgas vaporizing cook stoves, a new stove being shown in the Junior type, which is shown this year for the first time. Their high stove has been changed in ornamentation, and is very attractive this year. Another new stove is their sheet steel circular burner central draft oil stove, which is made with 8 and 10 inch wicks. Then ten pages are devoted to gas ranges, broilers, griddle stoves, tailor stoves, and several designs of hot plates. These are followed by several pages devoted to glass and sheet metal reservoir oil cook stoves and the various appliances adapted for use in connection with them. Twenty pages are given to description and illustration of a line of cast iron oil cooking stoves. Another new production is shown in their Parlor Vase oil heater, which is followed by their Parlor Dome and the Globe and Florence parlor heaters. The remaining pages of the book are de-

voted to gas and oil heating stoves, laboratory apparatus, solder furnace, glue heaters, lanterns, and gas stove appliances.

A NEAT ORDER BLANK in tablets is being furnished to the stove trade by F. M. Borden & Bro., 118 North Second street, Philadelphia, who make a specialty of stoves, stove repairs, summer cooking goods and refrigerators. The trade have found these order blanks of great convenience.

THE WILLIAM MILLER RANGE & FURNACE COMPANY of Cincinnati are favoring their friends in the trade with an advertising novelty which serves a useful purpose as well, being a constant reminder of the sender. It is a lead pencil upon which is stamped in gilt letters the following inscription: "Buy Miller Monitor Ranges and Furnaces. The William Miller Range & Furnace Company, Cincinnati, Ohio."

J. H. CORT & SON, Adams and Water streets, Brooklyn, N. Y., are issuing a new 26 page catalogue in a red cover of their gas cooking stoves and appliances. After a spring and summer introduction, a description is given of their patent gas burner, special attention being called to the non-clogging feature of the burner and the frictionless construction of their air mixer. An entirely new range is shown in their 164 and 184 series. This range is made without a water hack. This is followed by a line of cheaper gas ranges, after which a variety of gas hot plates, broilers and tallor stoves are illustrated and described.

CHARLES NOBLE & Co., Philadelphia, are sending out a 12 page booklet, descriptive of their new line of Home and Prize Liberty ranges. The booklet is tastefully gotten up and well illustrated. The different styles of the ranges are shown and the extras explained so that dealers and others interested may easily understand the extent of the line.

THE MILWAUKEE GAS STOVE COMPANY of Milwaukee, Wis., favor us with a copy of a 32-page pamphlet which they have issued relative to their Perfection gas ranges, radiators, heaters and broiler grates. Among the opening pages we find an illustrated description of the Perfection burner, directions for using a gas stove and a summary of advantages resulting from the use of gas for fuel. The Perfection range is offered in a variety of sizes and styles adapted to meet different requirements and embodying the modern features. The Perfection portable stoves and hot plates are also considered, together with an attractive line of gas grates, gas radiators and gas heaters. Several pages are devoted to soldering furnaces, flat iron heaters, ovens, &c.

RATHBONE, SARD & Co. of Albany, N. Y., favor us with a copy of a pamphlet relative to Acorn ranges for 1895. The pages measure 9 x 12 inches, permitting the use of good sized cuts, and are stitched together at the back by means of a white silk cord. The printing is in colors, producing a rich and artistic effect. The National Acorn range of the square and standard oven series is illustrated and described, engravings being presented showing the method of removing the grate bars without disturbing the linings or water front. The Magnet Acorn, a substantial six-hole construction with carved ornamentation and nickel trimmings, is also considered, together with the Puritan Acorn and the New Duplex Acorn. The latter is a distinctive design, and

in the ornamentation acorns are employed with pleasing effect. It is a four-hole range with broad burnished edges, double centers and heavy covers, drop broiler door, large fire box, double draft duplex grate and capacious ash pan. The Steel Acorn is the name of a six-hole wrought steel range of neat and substantial appearance. It is made in three sizes with ovens measuring 18, 20 and 22 inches. The top is cast iron with heavy covers and T-plates. The body is lined with asbestos and all oven plates are reinforced. The duplex grate is used in the brick lined fire box, and as the fixtures of the latter are common to all sizes it is a comparatively easy matter for the dealer to carry repairs. The Magnet Acorn and the Senator are other ranges considered in the pamphlet under review.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., are calling the attention of the trade to their new Home and Domestic ranges by means of some attractive circulars which they have just issued from the press. The Home Peninsular is a four-hole construction having either duplex, dockash, draw center or flat grate, and is intended for using coal, coke, wood or natural gas as a fuel. It has large oval fire box, which is extra lined, a large square ventilated oven and capacious sheet flues. It is made in four sizes and the usual modifications. The Domestic Peninsular is a six-hole range of attractive ornamentation, and is referred to by the makers as "a quick baker, superior cooker, rapid seller, and a profit maker." It embodies features similar to those mentioned in connection with the Home and is intended for using the same kind of fuels.

RATHBONE, SARD & Co., Albany, N. Y., have recently resumed operations at their works, starting with about 100 men, which number will be increased as the demands of the trade warrant.

A NEW INTEREST composed largely of Cleveland, Ohio, capital has purchased the business of the Ellwood Gas Stove & Stamping Company, at Ellwood City, Pa., and the style of the concern has been changed to the Ellwood Gas & Vapor Stove Company. The concern are under entirely new management. Additions to the equipment have been made and the capacity of the plant is being largely increased.

A VISIT to 9-11 Desbrosses street, New York, finds Luther & Lederhos occupying a building 80 feet front and 200 feet deep, the front of which they use for an office and showroom. The space back of the showroom is used for storing their large and varied line of gas and oil cooking and heating stoves. Back of the storehouse is their construction department, where the parts of the stoves are fitted and the stoves put together. Here they have power machinery for the purpose, and they are now busily preparing for the summer trade. Their showroom shows a number of attractive stoves. At the front of the showroom is their line of Enterprise gas heating stoves and radiators. Arranged on a high platform along the center of the room they show the Surprise, Leader, Hero and Enterprise gas hot plates, and their line of Enterprise oil stoves and lamp stoves. At the back of the showroom, on the floor, is shown a full line of their Enterprise cabinet gas ranges, some with a water heating attachment, and all with the boiler under the oven.

WILLIAM J. H. GLUCK of 218-222 North Gay street, Baltimore, Md., is distributing a neatly printed catalogue

relating to the Reliance gasoline stove. Special attention is invited to the line of single generators furnished with Reliance safety tank and also the low down tank. These goods embody a number of improvements for the season of 1895, and they are offered in sufficient variety to meet the requirements of the trade. In addition to the stoves made attention is given to burners, a repair list of Reliance single generators, ovens, &c. We also have from Mr. Gluck several pamphlets of pocket size illustrating and describing other specialties. Among these may be mentioned Gluck's Non-Explosive oil stoves, the May Queen and the Oil King stoves, ovens, water coolers, oil radiators, market stoves, wash boilers, refrigerators, ice cream freezers, &c.

THE FULLER & WARREN COMPANY of Troy, N. Y., have issued a four-page circular relative to cooking ranges for the spring trade. It is printed in two colors and calls attention to the Stewart ranges, of which many sizes and styles are offered. Among the features noted may be mentioned oval fire box, fitted with the company's patent triple interchangeable grate, thus giving in reality an assortment of three ranges in one; capacious flues, large ventilated oven, patent oven door opener and nickel trimmings. Accompanying the folder is a leaflet, upon which is printed a letter from a customer of the company, who states that he purchased a P. P. Stewart stove more than 29 years ago from Henry Parsons & Co. of Hoosick Falls, N. Y., and that he has used the same griddles, the same grate, the same center pieces and the same copper reservoir that went with the stove. The damper rod has once burned off, but in the many years that the stove has been in daily use on the customer's farm he has not expended more than \$1.50 in repairs. Wood has been burned in the stove, as he states that the farmers in his locality have that fuel in abundance and prefer it to coal. In commenting upon this letter the company state that such cases are frequently brought to their attention, and that many families are still using P. P. Stewart stoves which were purchased long before the war of the Rebellion.

G. H. HOLLIDAY of Ironton, Ohio, is said to have recently visited Athens in that State for the purpose of forming a stock company for the erection of a large stove and range works at Athens. It is stated that the new company would have a capital of \$30,000 and would employ 40 skilled workmen.

THE APRIL CALENDARS distributed by the Joliet Stove Works, Joliet, Ill., consist, like their predecessors, of blotting pads, one side being embellished with advertising matter printed in two colors. Upon one pad there is a half-tone engraving of Moore's Extra four-hole cook stove made with and without front feed, and the other pad makes reference to Moore's air tight heater, the 1895 pattern of which is referred to as "brim full of solid merit and selling points."

THE TROY NICKEL WORKS, Troy, N. Y., are issuing a rather startling announcement relative to their financial condition. It appears in bold face type printed in red upon the back of a postal card and reads as follows:

WE HAVE MONEY TO BURN,
But We Ain't Going to Burn It.
DON'T BE DESPONDENT:
Brace Up And Be A Man.
LOOK UP YOUR WANTS
And Send Your Orders To
TROY NICKEL WORKS,
TROY, N. Y.

TRADE REPORT.

The Iron Market.

As expected, there has been considerable buying of Lake Superior Ore during the past week, the amount involved aggregating about 2,000,000 tons. By far the greater part of this was taken by the leading Chicago interest, the balance being to smaller purchasers. So far as can be learned, the principal Pittsburgh producers, the Wheeling furnaces and the makers in the valleys have not yet taken hold. The sales covered Norrie at \$2.90, Ashland at \$3 and Chapin. One feature in connection with these transactions is the fact that the guarantee against a decline made by the mining companies covers only the particular grade of Ore sold at the price made.

The course of the leading Mesabi Ore interests is not yet defined. Some of the large consumers have their own mines in that section which they can fall back upon to a certain extent, thus restricting their purchases in the open market. Their own cost of production of metal is not, therefore, lifted to the level of that of others.

Now that the attitude of the sellers of Raw Material is pretty well defined, iron manufacturers and buyers of crude metal are beginning to worry over the question whether Coke operators and Ore companies will be able to keep the peg where they have put it. Buyers of Pig Iron and of Steel are, therefore, holding off to await developments.

Pig Iron.—The market has been quite active in New England, a number of season contracts having been placed. Among them is one for 6000 tons for radiator manufacture, secured by a Virginia furnace. Prices, however, have been very low, \$11 having been done in a number of instances for No. 2 Soft. At the published rates of freight this and other prices made out considerably less at Southern furnaces than the quoted prices supposed to be generally ruling. It is suspected that some special means of securing low rates of freight are available to the sellers. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$12 for No. 2, and \$10.50 @ \$10.75 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10 @ \$10.25 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

A considerable increase in the volume of Pig Iron business is noted in the Philadelphia market. Consumption is larger, and almost everybody seems to want more Iron than usual. There is no reason to suppose that the demand is of a speculative character, as prompt shipments are stipulated for, and there is no marked disposition to engage long deliveries. Prices are steady but not higher, although concessions that might have been had two or three weeks ago are probably not available to-day. The supply, however, is quite ample for current requirements, and while there may be some little stiffening in prices, it is not thought that

any change in quotations will be made for the present. Prices are about as follows for Philadelphia delivery and 20¢ @ 25¢ less for points within a radius of 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.25 to 11.75
No. 2 Soft.....	10.75 to 11.00

The aggregate business in the Chicago district during the past week was considerably larger than in any previous week for some time. The activity was quite pronounced in local Coke Iron. Single transactions are not very large, but buyers were more numerous and the total footed up to quite satisfactory figures. Some buyers have been quickened in their purchases by the advance in Ore and Coke, while others who have for some time been negotiating are holding off in the hope that prices may recede, although they know that for three months local furnaces have firmly maintained an advance on the prices current last summer and fall. The chances are against this, and the Southern furnacemen are already exhibiting a disposition to mark up their prices. Plenty of inquiries are in hand for both local and Southern Iron. Lake Superior Charcoal has recently sold in considerably larger quantities. One furnace company are now in possession of orders for future delivery exceeding 5000 tons. Negotiations are pending on more round lots for season delivery. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$12.75 to \$13.00
Local Coke Foundry, No. 1.....	10.25 to 10.50
Local Coke Foundry, No. 2.....	10.00 to 10.25
Local Coke Foundry, No. 3.....	9.50 to 9.75
Local Scotch No. 1.....	10.25 to 10.50
Ohio Strong Softeners, No. 1.....	10.25 to 10.50
Southern Silvery, No. 1.....	11.50 to 11.75
Southern Silvery, No. 2.....	11.25 to 11.50
Southern Coke, No. 2.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1 Soft.....	10.00 to 10.25
Southern, No. 2 Soft.....	9.75 to 10.00
Alabama Car Wheel.....	15.50 to 15.80
Jackson County Silvery.....	15.00 to 15.25
Other Ohio Silvery.....	14.25 to 14.50

The price of Foundry Pig Iron in the Pittsburgh district is higher by about 25¢ per ton, but sales are comparatively light. The situation is still considerably mixed and the market is just in that shape that it is liable to take a sudden turn, up or down, at any time. If it were clearly demonstrated that Coke would hold at \$1.35, higher prices would, it is believed, undoubtedly follow, while, on the other hand, should Coke sag in price, as many believe it will, a reaction in Iron would undoubtedly follow. Quotations on Foundry Irons are given as follows:

No. 1 Foundry.....	\$10.50 to \$10.75, cash.
No. 2 Foundry.....	9.90 to 10.15

Reports from the Pig Iron district of which Cincinnati is the center are gratifying. Consumers are apparently satisfied because prices are low and they are enabled to cover increasing business contracts at prices which will net them a profit, while on the other hand furnaces feel encouraged because of the increased volume of business and the hardening tendency of prices, which facts they believe will eventually lead to greater appreciation and a fuller

employment of furnace capacity. During the past week there have been fewer large orders than for several weeks, but the aggregate tonnage of sales has been but little below the average during March. Of the several hundred orders received by agents, about three-fourths have been from small consumers, and for prompt shipments; the other fourth will represent large buyers whose purchases will, of course, largely outweigh the takings of the others, and the delivery for which Iron extends over a period of four to six months. The bulk of the Iron sold has been to foundries, but consumers of all kinds are represented in the present buying movement: Rolling mills, Car works, Implement makers, Malleable Iron works and Architectural Iron manufacturers. When the business current is received fully, it seems to be of a better character with a more solid foundation and a more confident feeling, even if no advance in prices is secured. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.75 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The situation in the St. Louis market is showing signs of gradual improvement and the impression is gaining ground that prices have reached a point where a slight advance is assured. The largest producers in the South are refusing to shade prices. Local consumption is increasing and consumers are disposed to increase the size of their orders. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

Metal Market.

Pig Tin.—Prices in the wholesale market advanced early in the week under the influence of conditions similar to those that prevailed last week, spot and current metal delivery rising 0.15¢ @ 0.20¢. Later rates dropped again almost as much, leaving the market at almost precisely the same level as that of a week ago. The demand from consumptive quarters was rather tame, and indications pointed to a supply that is more than enough to go around. To these factors may be attributed the recession in prices. Shipments from the Straits last month were below most calculations, having been only 3300 tons, against 4130 tons in March, 1894, leaving the total since the beginning of the year below the average. Our spot stock is shown to have increased to 2680 tons, but the greater portion is well under control. The visible supply for Europe and America on the 1st inst. was 23,076 tons, against 23,333 tons a month previous and 18,793 tons a year ago. The market closed rather weak. Quotations on small lots of Straits from store are the

same as those given last week—viz., 14½¢ @ 15¢ per lb.

Copper.—Very little change in prices has taken place, but the market shows quite firm undertone under the support of moderately active demand. This is more particularly the case with Lake Superior Ingot. Electrolytic and common casting stocks have met with very fair sale; but the bulk of business is made up of comparatively small orders. Consumption is regarded as being well up to the average for the season, but production is equally full. In retail business inquiry has been better. Prices for small jobbing quantities are unchanged on a basis of 10½¢ for Lake Ingot.

Sheet Copper.—Some good sized orders were placed early in the week, but trade in this department seemed to have relapsed into a condition of quietude later in the week. The volume of business has been little more than moderate taken altogether, but the expectation prevails of an increased demand for Cornice Copper later in the season when building operations are more advanced. Small lots of Sheet Copper from store are quoted at the net list price of 14¢ per lb.

Pig Lead.—Prices have weakened slightly under the influence of more restricted demand and freer offering. The price for small lots of American Pig from store rules at the same level that it has held for some weeks past—viz.: 33¢ @ 3½¢ per lb.

Lead Pipe and Sheet.—A somewhat better feeling is noted among buyers in this vicinity since the resumption of work in the building trades after the strike and the arrival of signs of spring weather. The volume of orders does not, however, show any large increase as yet. It is believed that the conditions are favorable for a good summer business in the line of Plumbers' Supplies. Prices in this section are maintained on the list basis—namely, 5½¢ for Pipe and 6½¢ for Sheet, with a discount of 20¢.

Spelter.—There has been only a moderate business in this market and the demand at present is slow, with little call for larger quantities than single carloads. Prices for small parcels from store remain quite steady, however, with 3½¢ @ 4¢ the range for good Western brands.

Tin Plate.—In some ways business has been more active. Some large orders which have been received from the Pacific Coast have been the leading feature of encouragement to the trade this week. These were, however, of an abnormal or accidental nature, the demand being due to the non-arrival at San Francisco of a vessel with Tin Plate needed for Alaska salmon canning expeditions which are now fitting out and by canners on the Columbia River, whose season is about to open. Otherwise the volume of orders of any magnitude since the opening of the new month had been rather disappointing. Small jobbing business is fairly good, but most consumers still cling to the hand-to-mouth policy in buying which they adopted during the panic times. Prices of imported Plates are more firmly held, owing to the stiffening on the other side following the closing down of many mills. Stocks of foreign material, too, are below the average, but this circumstance has less weight in view of the fact that American Plates are coming into the market in ample quantity to fill any deficiency in this respect.

A special London cable dispatch of April 3 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate market more hopeful, but the wages question prevents makers accepting buyers' offers. American inquiry has been large, with buyers offering a slight advance, and Russian orders fair at 3 pence advance on favorite brands. Shipments have been large and stocks are greatly reduced. Last returns gave 182,000 boxes as the total at shipping points. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 10 14 x 20.....	9 6	③	....
Siemens Cokes, 10 14 x 20.....	9 9	③	....
Terms, 30 x 30.....	18 7	③	22 6
Charcoals, 10 14 x 20.....	11 7	③	13 6

The following officers were elected by the New York Metal Exchange by a vote of 110 to 40, out of a total membership of 209: For president, John J. Williams of John Davol & Son; for vice-president, Adolph Lawlohn of Lawlohn Bros.; for treasurer, Morton B. Smith.

For members of the Board of Managers: Edmund Hendricks of Hendricks Bros.; William H. Davol of John Davol & Son; Spencer A. Jennings of Bruce & Cook; Robert M. Thompson of Orford Copper Company; B. Hochschild of American Metal Company, Limited; George Nissen of George Nissen; George H. Hull of G. H. Hull & Co.; J. H. Lobdell of J. H. Lobdell & Co.; Charles S. Trench of C. S. Trench & Co.; W. H. Wells of Robert Crooks & Co.; Robert Gentle of Robert Gentle; L. Nachmann of L. Nachmann; Henry H. Adams of H. H. Adams & Co.; George N. Frecker of George N. Frecker.

For Arbitration Committee: J. Mitchell Clark of Naylor & Co.; Fred. Steiner of Behr & Steiner; Charles E. Bidwell of Bidwell & French; T. D. Hazard of T. D. Hazard; George V. Tompkins of George V. Tompkins.

For inspectors of election: S. Mendel, William Hagan, John Deardon.

An amendment to the by-laws was adopted by which the Board of Managers may hold their regular monthly meetings on the second instead of the first Tuesday of each month.

Chicago Report.

Scrap.—A better inquiry is being received from consumers, but actual business is still light. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Machineable Cast.....	5.00	....
Stove Plate (free of burnt).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Flow Steel and Breaking	4.00	....
Stock.....	2.00	....
No. 2, such as Shovels, Hoes, &c.....	3.00	....
Old Boilers—whole (Iron).....	3.00	....
(Iron)—cut in single	5.00	....
Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler	5.00	....
Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horsehoes.....	7.50	....
Copper Bottoms.....	6 ③	....
Copper Clips and Heavy.....	6 ③	....
Light Brass.....	6 ③	....
Pipe Lead.....	2½ ③	....
Tea Lead.....	2 ③	....
Zinc.....	2½ ③	....
Rubber.....	4 ③	....

Anthracite.—The movement is small. Carload lots of 12 net tons or over are quoted as follows, although some concessions are now being made:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.75	\$5.00
Milwaukee, Wis.....	4.75	5.00
Kansas City, Mo.....	7.95	8.20
Council Bluffs, Iowa.....	7.95	8.20
Lincoln, Neb.....	8.10	8.35
Sioux City, Iowa.....	7.95	8.20
Aberdeen, S. Dak.....	8.00	8.25
Dubuque, Iowa.....	6.65	6.90
Madison, Wis.....	6.25	6.50
St. Paul, Minn.....	7.25	7.50
Burlington, Iowa.....	6.25	6.50
Des Moines, Iowa.....	7.75	7.95
Davenport, Iowa.....	6.05	6.30
St. Joseph, Mo.....	7.95	8.20
Leavenworth, Kan.....	7.95	8.20
Omaha, Neb.....	7.95	8.20

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

CCHEERING REPORTS from manufacturers and jobbers make it evident that there is a better feeling in business circles and encouraging evidences of improvement. This improvement is seen in some lines outside of the Iron and Hardware interests, which, however, are beginning to feel the effect of a greater confidence and an increasing volume of trade. Reports from representative jobbing houses contain indications of a growing business, and point to the season which is now upon us as one which will be characterized by a generous movement of merchandise. Several manufacturers refer to the business of the past month as having been exceptionally heavy, and some of the factories are working to their full capacity. These are encouraging signs, and with the quickening in the demand which is reported by many houses, some of whom are very busy, the month opens with a promising outlook. In the matter of prices there is little new to report, though there are perhaps indications of a slightly better tone in some lines.

Advices from Chicago.—The orders for shelf hardware steadily grow larger and are also increasing in number. The volume of business for March was much in excess of that of March last year. It is quite significant, as March was the largest month during the whole of '94, and the indications are now that April will show a continuance of the heavy business which characterized the past month. This large volume has been done despite the rather limited demand for staple goods, which, on the contrary, was a conspicuous feature of the spring trade a year ago. It is believed by many that business in staple goods has simply been deferred and that it must be felt later in the season. The reasons for the smaller business this year have not been hard to find. In the first place the cold winter weather was unusually steady, so that outdoor work could not be prosecuted until very recently, and, in the second place, an unprecedented dry period for spring was experienced throughout the whole of the West. The occurrence of mild spring weather and a very general rain have together brought out an improved tone among the Western merchants, and a much larger volume of business in staples is now looked for with a great deal of confidence.

General Tinware is moving quite freely. The demand for builders' Hardware is quite backward, owing to the fact that little has so far been done in the building line, except in a few localities. This movement will come later and will undoubtedly be of large proportions when it does come. The demand for Tin Plate has recently improved very considerably, but so far has resulted in no stiffening in prices. A notable feature of the Hardware trade at present is the improvement in collections, which are now considerably better than at any time for several months.

Notes on Prices.

Wire Nails.—During the week under review there has been, considering the recent large purchases, a good deal of inquiry and a very satisfactory volume of business. Several large orders have been placed, but the demand is principally for lots of moderate size. The mills are well occupied and are looking forward to a steady business during the season. Prices are without change.

Advices from Chicago.—Manufacturers report about the same volume of business as in previous weeks, with very little change in the character of the orders received. Although at no time this spring has the usual rush been perceptible in Wire Nails, the local factories report that the month of March was the largest ever experienced, both as to production and shipments. Jobbers are enjoying a very much better demand for small lots from stock. The carload buyers are by no means fully supplied, so that an increase in the demand from consumers is expected to result in a much heavier movement as soon as it fairly develops. Small lots are quoted at \$1 to \$1.05 from stock.

Cut Nails.—During the past week there has been more inquiry, and the market is characterized by a fairly good tone. A meeting of the Eastern manufacturers was held last week, and the following prices with a 60 cent average were adopted: For carload lots at mill, 70 cents; for less than carload lots at mill, 80 cents, and for similar lots on dock or from store, 90 cents. Where the average is less than 60 cents an advance will be made on the base price. Some of the manufacturers refer to evidences of a reaction from Wire Nails in favor of Cut Nails for certain uses.

Advices from Chicago.—Manufacturers are in receipt of only a moderate business. Small lots from stock are maintained at \$1.

Barb Wire.—The past month was characterized by a large business in Barb Wire, and April opens with indications of a steady demand and a good business. Prices are pretty well maintained, the market being represented by the quotation of \$1.85 for carload lots of Four Point Galvanized at mill. The market is not, however, entirely uniform, and this figure is shaded slightly under pressure.

Advices from Chicago.—The month of March was one of the largest in production and shipments in the history of local manufacturers. This result was accomplished notwithstanding the absence of any appearance of tulle or unusual exertion. Indications at present are that April will be a month of very much the same character. The demand is continuous, although few orders call for anything like the old time large

lots. Jobbers report that their trade is considerably unsettled owing to the offers by competitors of prices under those quoted by manufacturers. The Barb Wire trade is therefore not in as steady and healthy a condition as the Wire Nail trade. But it is hoped that an improvement will shortly take place, when the demand from consumers appears in its usual spring volume. General wire products other than fencing are in active demand, keeping the local works very busy.

Shoe Finders' List.—The Tack manufacturers under date of March 30 have issued a Shoe Finders' list relating to Shoe Nails, Shoe Tacks, &c. It is a complete revision of former lists and is subject to a discount of 33½ and 2 per cent. for cash.

Cordage.—Notwithstanding an improved demand for Cordage prices are somewhat irregular, and the market is rather weak. Quotations for large lots, f.o.b. factory or New York, are as follows, subject to a discount of 1½ per cent. for cash:

Manila, base.....	65¢	7
Sisal, base.....	35¢	4
New Zealand, base.....	35¢	4

Binder Twine.—The Binder Twine market shows no particularly new features, and local demand is somewhat limited. The bankers' Twine continues to be a disturbing influence in the market, and is being distributed, it is understood, to a considerable extent at prices ranging from 4½ to 4 cents per pound in carload lots. Manufacturers of new Twine are disposed to adhere to former prices, the following quotations for car lots fairly representing the market according to the size of the order and the desire of the manufacturer for business:

	Per pound.	
	Cents.	
Sisal.....	45¢	5
Standard.....	45¢	5
Manila.....	55¢	5
Pure Manila.....	65¢	7

Old Metals.—The demand is somewhat better, especially for certain grades of Scrap Iron. Quotations, however, show no quotable change, although they are more firmly held. Dealers' purchasing prices for moderate sized lots, New York delivery, are substantially as follows:

Heavy Copper.....	7b 7¢
Light and Annealed Copper.....	6b 6¢
Heavy Brass.....	4b 45¢
Light Brass.....	3b 35¢
Lead.....	2b 25¢
Tea Lead.....	2b 25¢
Zinc.....	2b 25¢
No. 1 Pewter.....	1b 10¢
No. 2 Pewter.....	1b 55¢
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross ton.....
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rags, Paper, &c.—The general condition of the market is unchanged, and dealers' purchasing quotations do not vary from these made last week, namely:

No. 1 White Rags.....	7b 3¢	@ 3½¢
No. 2 White Rags.....	7b 2½¢	@ 2½¢
Mixed Rags.....	7b 2¢	@ 1¢
Blues and 3ds.....	7b 1½¢	@ 1½¢
Hard Sized White Shavings.....	7b 24¢	@ 24¢
No. 1 White Book Shavings.....	7b 19¢	@ 21¢
No. 2 White Book Shavings.....	7b 17¢	@ 18¢
Light Book Shavings.....	7b 15¢	@ 15¢
No. 1 Mixed Shavings.....	7b 12¢	@ 12¢
No. 2 Mixed Shavings.....	7b 10¢	@ 10¢
No. 1 Printed Books.....	7b 11¢	@ 11¢
Ordinary Mixed Books.....	7b 10¢	@ 10¢
Newspapers.....	7b 10¢	@ 3-5¢
No. 1 Manila Paper.....	7b 15¢	@ 1¢
No. 2 Manila Paper.....	7b 10¢	@ 1¢
Bogus Paper.....	7b 10¢	@ 1¢
Common Paper.....	7b 10¢	@ 1¢
Straw Chips.....	7b 10¢	@ 1¢

Binders' Clippings.....	7b 1b	@ 1½¢
Jute Butts.....	7b 1b	@ 1½¢
No. 1 Jute Bagging.....	7b 1b	@ 1½¢
Mixed Bagging.....	7b 1b	@ 1½¢
No. 2 Bagging.....	7b 1b	@ 1½¢
Hemp Twine.....	7b 2b	@ 2½¢
Manila Rope.....	7b 2b	@ 2½¢
Jute Rope.....	7b 1b	@ 1½¢
Mixed Rope.....	7b 1b	@ 1½¢

Old Rubber.—The following quotations represent about the prices paid by dealers, New York delivery:

Car Springs, ton lots, 7b.....	\$0.03½ @ .04
Rubber Shoes, carloads, delivered at factory, 7b.....	@ .05½
Rubber Shoes, less than carloads, 7b.....	@ .04½
White Wyring Rolls, 7b.....	@ .03½
White Springs, 7b.....	@ .03½

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Metal and Miscellaneous Prices.

CHICAGO, APRIL 4, 1895.

Tin—

Ceramic pipe.....15¢@25¢
Imported Tin Plates—
 Charcoal Plates—Bright.
 Guaranteed Plates command special prices, according to quality.

	Per box.
IC, 10 x 14.....	\$5.50
IC, 12 x 12.....	5.60
IC, 14 x 12.....	5.75
IC, 16 x 12.....	5.85
IC, 20 x 28.....	11.00
IC, 10 x 14.....	7.25
IC, 12 x 12.....	7.35
IC, 14 x 12.....	7.45
IC, 16 x 12.....	7.55
IC, 20 x 28.....	12.50
IC, 10 x 14.....	9.00
IC, 12 x 12.....	9.10
IC, 14 x 12.....	9.20
IC, 16 x 12.....	9.30
IC, 20 x 28.....	12.50
IC, 10 x 14.....	7.25
IC, 12 x 12.....	7.35
IC, 14 x 12.....	7.45
IC, 16 x 12.....	7.55
IC, 20 x 28.....	12.50
IC, 10 x 14.....	9.00
IC, 12 x 12.....	9.10
IC, 14 x 12.....	9.20
IC, 16 x 12.....	9.30
IC, 20 x 28.....	12.50

	Per box.
Steel Cokes—IC, 10x14, 14x20.....	\$4.50
IC, 14x20, 100 lb.....	4.35
IC, 10x20, 50 lb.....	4.25
IC, 14x20, 50 lb.....	4.35
IC, 10x20, 25 lb.....	4.50
IC, 14x20, 25 lb.....	4.60
IC, 10x14, 14x20, 14x20.....	4.10

Charcoal Plates—Terme

	Per box.
Guaranteed Plates command special prices, according to quality.	
Manuel and Dean Grades.....	\$11.50
Wheatster Brand.....	11.60
IC, 14 x 20.....	4.875
IC, 10 x 28.....	9.75
IC, 14 x 20.....	6.12
IC, 20 x 28.....	12.25

	Per box of 100 sheets.	Per box of 112 sheets.
IC, 14 x 28.....	\$11.75	\$11.25
IC, 14 x 28.....	13.00	13.75
IC, 14 x 31.....	18.00	18.75
IC, 14 x 31.....	16.00	16.75

	Per box of 100 sheets.
IC, 14 x 28.....	\$12.50
IC, 14 x 28.....	25.50
IC, 14 x 28.....	22.25

American Tin Plates.

	Per box of 100 sheets.
IC, 10 x 14, 12 x 12, 14 x 20.....	\$5.00
IC, 10 x 14, 12 x 12, 14 x 20.....	5.25

Charcoal Plates—Bright.

	Per box of 100 sheets.
IC, 10 x 14, 12 x 12, 14 x 20.....	\$5.00
IC, 10 x 14, 12 x 12, 14 x 20.....	5.25

Aluminum—

	Per box of 100 sheets.
No. 1 Aluminum (guaranteed over 95% pure), in rolling ingots.....	\$5.65
Small lots.....	5.85
Top lots.....	5.85
No. 2 Aluminum (guaranteed to be over 95% pure), in ingots for remelting.....	5.65
Small lots.....	5.85
Top lots.....	5.85

Antimony—

	Per box of 100 sheets.
Cookson.....	\$5.65
Small lots.....	5.85

Brass—

	Per box of 100 sheets.
Finished.....	\$5.65
Roll and Sheet.....	25.00

Brass and Copper Tubes

	Per box of 100 sheets.
Brazed Brass Tubing.....	\$5.65
Small lots.....	5.85

Copper and Bronze Tubing

	Per box of 100 sheets.
Small lots.....	5.85

Palme.

	Per box of 100 sheets.
IC, 10 x 14, 12 x 12, 14 x 20.....	\$5.75
IC, 10 x 14, 12 x 12, 14 x 20.....	5.85

Ironplate, A.A.A., tissue paper packed:

	Per box of 100 sheets.
IC, full weight, 14 x 20.....	\$5.25
IC, full weight, 14 x 20.....	5.30

Ironplate A:

	Per box of 100 sheets.
IC, full weight, 14 x 20.....	\$5.25
IC, full weight, 14 x 20.....	5.30

Ironplate A:

	Per box of 100 sheets.
IC, full weight, 14 x 20.....	\$5.25
IC, full weight, 14 x 20.....	5.30

R. W. & Co., IC, 14 x 20, 100 lbs.

	Per box of 100 sheets.
Old Hundred, IC, 14 x 20, 100 lbs.....	\$4.50
Old Hundred, IC, 14 x 20, 100 lbs.....	4.60

Roofing Plates.

	Per box of 100 sheets.
IC, 10 x 14, 12 x 12, 14 x 20.....	\$10.00
IC, 10 x 14, 12 x 12, 14 x 20.....	10.10

Alaska (heavily coated), IC, 30x28.

	Per box of 100 sheets.
IC, 30 x 28.....	\$13.00
IC, 30 x 28.....	13.10

Special, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Ironplate, IC, 20 x 28.

	Per box of 100 sheets.
IC, 20 x 28.....	\$13.00
IC, 20 x 28.....	13.10

Extra Pipe Granite:

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Common American Refined.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Sheet Iron

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 1, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 2, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 3, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 4, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 5, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 6, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 7, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 8, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 9, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 10, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 11, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Patent Plated, No. 12, A.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Lead

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Soft Pipe Lead.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Wrought-Iron Pipe

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Cast-Iron Soil Pipe

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Leader Pipe

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Elbows

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Furnace Fittings

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Steel Roofing

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Metallic Shingles

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Drain Pipe—Tie

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Paints, Oils, &c.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Slab Spelter

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Solder

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Antimony

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

NEW YORK, APRIL 5, 1895.

The following quotations are for small lots.

Elbows and Shoes—

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Corrugated

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Iron Sheet

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Common R. G. Cleaned American.

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Galvanized

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Lead

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Metal, Expanded—

	Per box of 100 sheets.
IC, 14 x 20.....	\$4.875
IC, 14 x 20.....	4.90

Mitres, Eave-Trough—

Lead, White, Atlantic and Jewet	100 @ 500 B.....	..
Lead, Amn. White, in oil.....	..	..
Lead, Red, bbls. and $\frac{1}{2}$ bbls...	..	..
Lead, Red, kegs.....	..	..

THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, April 13, 1895.

DAVID WILLIAMS - PUBLISHER

BUSINESS OFFICES:

NEW YORK.....96-102 Reade Street.
PHILADELPHIA.....220 South Fourth Street.
BOSTON.....146 Franklin Street.
PITTSBURGH.....Room 500 Hamilton Building.
CHICAGO.....59 Dearborn Street, cor. Randolph.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....812 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 42 Cannon street, London, England.

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Hasty Strikes.

The strike which tied up nearly all the surface railroads of Brooklyn during the month of January has been the subject of investigation by a special committee of the New York State Assembly. This committee has just handed in an exhaustive report on the matter which, whatever may be thought of the value of the conclusions and recommendations offered, contains at least one significant statement which is worthy of repetition as illustrative of the tendency of strikes in general. In connection with the failure to agree and the sudden declaration of a strike the committee says: "Arbitration had not been resorted to and not even suggested by either party previous to the declaration of the strike. Had that been done and an arbitration had there is no doubt in the minds of your committee that the entire difficulty might have been avoided."

Prevention Versus Cure.

In view of the history of the strike, as detailed by the committee, this statement is probably true. And it would apply just as truly to many other recent strikes, where the "ounce of prevention" afforded by arbitration or conciliation was not resorted to until a strike, hastily resolved on and carried out, had embittered and hardened the feelings of both parties to the dispute. Then began the "period of cure," represented by heated arguments or stubborn resistance on either side, culminating finally in a more or less unsatisfactory arrangement, after untold loss and trouble had accrued to all concerned. The cost of the Brooklyn trolley strike is estimated as at least \$2,000,000, of which \$750,000 was borne by the strikers, \$275,000 by the city in suppressing disorders, and the balance by the railroad companies

and the public generally. Moreover, of the 5000 men who went out not more than 10 per cent. recovered their places. All this would most likely have been avoided by a little prudence and forbearance on the part of both employers and employed, giving time for a possible amicable adjustment of their differences.

Ideals.

We all have our ideals, be they high or low, but in how few cases do they so dominate our lives as to essentially change them for the better! The boy entering upon a trade or a profession or starting at the bottom of the ladder in a mercantile house is seldom without his visions of his later years of success. That he does not reach the goal of his ambition may be perchance because his ideal was beyond his reach, but far more likely because he failed to strive for it with undivided purpose. Altogether too likely he has looked upon riches as the acme of success. But let him for a moment look back upon the lives of great men. In how few instances were they even wealthy and in what single instance is a man long to be remembered simply because he was rich in worldly goods. The ideal of a good education and an upright character is one that can be reached by all and forms the substantial foundation upon which all future success must be erected. The young mechanic may well seek to be the best workman in the shop, to know more about the why and the wherefore of his methods of work than any one else, to have the credit of making the fewest mistakes. These are perhaps but lowly ideals compared with some of our air castles, but they will sooner or later put the man in charge of others. But this means work, and study too, outside of working hours; it means the exercise of the powers of observation; it means that during the hours of labor the work must receive the undivided attention of the workman, and it means, above all things, the utmost patience. Such results as he strives for cannot all be secured in a day; it will take months and years too, but with life spared he may always climb higher.

Municipal Control of Gas.

Mayor Stuart of Philadelphia, in his fourth annual message, recently issued, gives a very favorable report of the working of the Municipal Bureau of Gas in that city. From the statistics contained in the mayor's report it appears that the total expenditures of the bureau, from 1891 to 1894 inclusive, for material, labor, supplies, coal, &c., were

\$10,858,910.58, and for extensions and permanent improvements, \$1,050,248.81, making a total of \$11,909,159.39. During the past four years there has been turned into the city treasury, as receipts from this bureau, \$14,790,404.25, or very nearly \$3,000,000 in excess of the entire expenditures. This is considered a very favorable showing in face of the fact that the price of the city gas in 1894 was reduced from \$1.50 to \$1.00 per thousand feet, a decrease of 33 1/3 per cent. in price. From 1891 to 1894 the Bureau of Gas has furnished, in addition, the various municipal departments, and for street lighting, 2,407,308,398 cubic feet of gas, for which the bureau received no credit at all, and which, had the city been compelled to purchase at even one-half the price paid by private consumers, would have cost \$1,649,651.

Trade Education in India.

An East Indian exchange states that Lord Elgin, the present Viceroy of India, is very much interested in trade and technical education. He has under consideration the establishment, under government auspices, of schools where the Indian mechanics will be offered opportunities of learning their trades in a more efficient manner than is the case at present. Native workmen are very conservative. A trade or profession is followed in a family from father to son. All the trade education that they get is such as is received practically in the shop from their parents. Consequently but little progress or improvement is made in the mechanical arts in that country, the native artisans keeping in a certain groove which has never altered from age to age. The Government has at last had its eyes opened to the fact that much might be done in this field to improve not only the condition of the workman, but also the quality of the work he turns out, if better opportunities were afforded him of learning his trade by means of such institutions as the trade and technical schools which have proven so valuable in this country and in Europe.

Coal mining statistics for the State of Illinois show that 70 new mines were opened last year and 120 closed or abandoned. Notwithstanding the decrease of 50 in the number of mines, the product at the same time increased 2,087,288 tons. The fact that the number of mines in Illinois is at present 148 less than in 1890, while the output is 4,500,000 tons in excess of that year, indicates that the abandonment of the small mines as unprofitable has largely taken place. The business is now concentrated in the larger mines, with improved facilities for working them. The mining of coal by machinery is rapidly increasing, ten more mines having adopted this system last year than in 1893.

THE LETTER BOX.

Pressure on Kitchen Boiler.

From J. O., *Yonkers, N. Y.*—What pressure is there in a kitchen boiler in which the water pressure is 70 pounds from the mains in the street? It has been described as several tons on a 5 x 12 boiler, but I do not see how this can be.

Answer.—Pressure is usually calculated per square inch, and with a 70-pound pressure each square inch of the boiler has a 70-pound pressure on it. Taking a 12-inch boiler and calculating the area of the head by squaring the diameter and multiplying the result by the decimal fraction 0.7854, it shows an area of 113 inches, and there being a pressure of 70 pounds on each one of these inches, a total of 7910 pounds, or about 4 tons, bears on this head to tear it away from the body of the boiler. A similar pressure is exerted against the head in the other end of the boiler. To find the area in the surface of the boiler multiply the diameter, or 12 inches, by 3.1416 and the circumference, 37.7 inches, will be found. This multiplied by the height of the boiler in inches, or 60, will give 2262 square inches of surface. Against each inch of surface a pressure of 70 pounds is bearing, or a total of 158,340 pounds. This, added to the pressure that is bearing on each of the heads, makes a total of 174,160 pounds, or a little over 87 tons. If such a pressure were brought to bear on any one square inch of the boiler it would be burst immediately, but being distributed at the rate of 70 pounds per square inch all over the boiler, the tensile strength of the material of which it is made readily confines the water in it.

Computing Heating Surface.

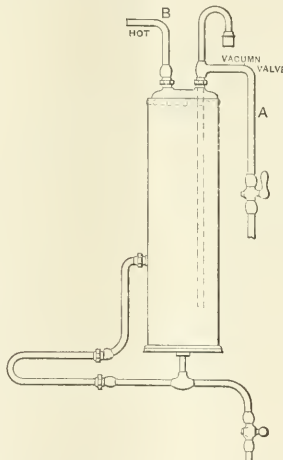
From A. G. K., *Canada.*—I would like to ask you how I can calculate the number of feet of $\frac{3}{4}$ inch pipe that must be used in a radiating coil, made with return bends, to heat a room 12 x 14 with a 12-foot ceiling. It is to be connected with a coil in a furnace that will be made of $1\frac{1}{2}$ inch pipe. One inch pipe will be taken from the furnace coil to the radiator in the room, and the $\frac{3}{4}$ inch return pipe will be taken from the radiator to the furnace coil.

Answer.—The room in question contains about 2,000 cubic feet of space; and calculating that one square foot of heating surface will be required for 30 cubic feet of space, it will be seen that as many feet of heating surface will be required as 30 is contained into 2,000, or about 67 square feet of heating surface. This will require about 241 lineal feet of $\frac{3}{4}$ inch pipe. In connect-

ing the coil with the furnace, however, pipe of the same size should be returned from the radiator as is carried to it; and it is probable that if the radiator is made of 1 inch pipe, better circulation and heating will result.

Collapsed with a Vacuum Valve.

From OLIVER TWIST, *Canada*—In *The Metal Worker* of March 16, "M. A. C.," Petokey, Mich., is somewhat puzzled to know what caused the boiler to collapse when it was provided with a vacuum valve. He says "The boiler



Collapsed with a Vacuum Valve.

collapsed while drawing water out of the main." Let us for a minute look at the sketch, which shows a boiler connected as described by "M. A. C." Suppose it to be in its normal condition under 40 pounds pressure, which being suddenly removed and the vacuum valve in working order, the water in the vertical pipe A will run back into the main, leaving the boiler full. If a good fire is on at this time steam will form in top of boiler and gradually force the water up the tube and out into the main, more or less according to the length of time the pressure is off and the condition of the fire, until the boiler may be half full of steam, when the pressure may be again replaced, when the steam will be condensed suddenly, forming a vacuum, which the valve in its present position will not prevent, as it is placed on the wrong pipe. It should be as close to the top of the boiler as circumstances will allow, on the hot water service at B, thus admitting air directly in the top of cylinder.

Public Pumps.

From J. T. C., *Winchester, Ky.*—I would like the opinion of the readers of *The Metal Worker* on public pumps. Before we got water works in our city we used cisterns. Now the city council wants to utilize the water in these cisterns for public drinking purposes; and it is proposed to use some kind of pump in connection with them. The pump must be set from 10 to 15 feet from the cistern. I would like to know what is the best method of putting in the pump to keep it from freezing and what character of pump is best for the purpose?

A Peculiar Furnace Experience.

From S. C., *Cleveland, Ohio.*—In answer to "H. R. D." of Brooklyn, N. Y., in *The Metal Worker* of March 30, I will say that he is all wrong in regard to his double chamber hobby. While we have not constructed a double chamber we have an inside lining (as the sketch in *The Metal Worker* of March 9 will show), carried up to the bottom of hot air pipe, with holes at bottom to allow circulation between inside and outside wall or chamber. His suggestion looks all right, but we have seen cases where double chambers were used and air taken at top or near it, and when the wind would change out would go the hot air to the cold world through the duct. Hot air rises, as we all know, and when you depend on natural law and use construction as "H. R. D." suggests, it has been our experience that the air is just as liable to go one way as another, so we are sure our trouble does not lie there.

Answering "J. W. G." of Clinton, Ill., in *The Metal Worker* of March 23, will say it is next to impossible to connect inside air pipe to outside duct, for, as our sketch will show, they are from opposite sides of house and the cold air duct is underground. As to the dampers, in both cases the inside registers have valves which would act in the same capacity as damper. The cold air duct has hinged valve. But, do you see the point? Our customer does not want to bother himself to regulate valves half a dozen times a day as the wind changes; nor will he do so. As for taking off pipe inside of chamber, I will say that that has been tried, so this not help us out.

To "S. J. P." of Pittsburgh, Pa., will say that we did not reduce size of pipe by a taper piece, running same to 9 inches diameter. We do not think that reducing pipe would do the business, for we can operate valves in registers, reducing capacity. This experience seems to be a corker for all of us, but we will keep at it and get it to work and let you know through *The Metal Worker* how we succeed.

From E. E. PALMER, *Harrisburg, Pa.*—In looking over *The Metal Worker* of March 30 I see that my friend "C. S.," of Cleveland, has not yet conquered his "peculiar furnace job," and although it is a very difficult matter to make a furnace work on paper at so great a distance, I will offer the following suggestions: "C. S.," will not be able to take cold air from the floor of the house and from the outside too at the same time. The air from the outside is colder than that on the floor inside, and therefore the pressure is greater, and if both ducts are open at the same time and only a part of the warm air pipes are used, the outside air, being colder, would press harder against the partial vacuum inside the furnace casing, caused by the heat from the furnace, and drive the air out of the inside pipe or duct the same as though it were a warm air pipe, only in less quantities; and it would not matter whether the pipe extended up inside the furnace casing or not. The fire place when open would only assist such circulation. Now, the way I would advise doing would be to make the inside air face as large as necessary to supply all the heat pipes, then construct an air duct from it to the lower part of the air chamber, the same as though taken from the outside, and place in each duct a good tight damper, so arranged that the air can be taken from either outside or inside, as desired, but not from both at once. Then, with the fire place closed up the inside air flue will work.

Taking the cold air from the floor inside of a room to be warmed to the air heating chamber of a furnace is simply heating by direct radiation, as the air is revolved over and over, warmed and rewarmed, just as it would be if a steam or water radiator or a stove were placed where the cold air face is located, and robs a furnace of one of its most valuable features—viz., providing means for good ventilation in our homes, churches and schools. A thorough knowledge of the laws of natural philosophy which govern air circulation will greatly benefit those engaged in warm air furnace work, and will often lead them to see defects in mechanical appliances that have been looked upon as perfect until failure of them proves their weakness.

Repairing Gasoline Stoves.

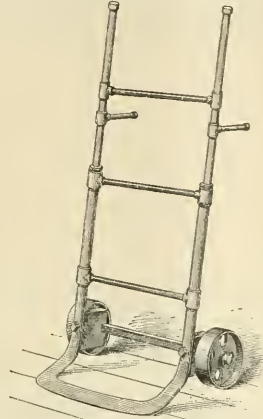
From L. R. B.—Will some one inform me through *The Metal Worker* how to repair a new process gasoline stove? The oil drops properly from the tank, but the flames from the burners are unsteady, and sometimes one or more of them will go out and fill the room with a disagreeable odor. The burners are kept clean by brushing them frequently, and seem to be all right, as far as I can see. I have the impression that the trouble is in the conveying pipes, which seem to be somewhat coated with a greasy formation in a place where it is hard to get at. The difficulty I find with people using gasoline stoves is that they let the stove go too long before giving it a good cleaning. They also crowd the stove to too high a capacity or try to make the stove do more than it is capable of doing.

Note.—We hope some of our readers who are using and selling these goods will describe their experience for the benefit of our correspondent. It would seem that the gasoline has been brought to the stove in a can that has been

used previously for kerosene or some other oil, which will produce effects that are not desirable.

A Truck Made of Pipe.

From P. F., *Trenton, N. J.*—I send you a sketch of a truck that I have made of short pieces of pipe and leaky fittings when time hung heavy on my hands. Having a forge in the shop, I flattened two short pieces of pipe and



A Truck Made of Pipe.

welded them together and bent them, as shown at the front of the truck. This pipe was 1½-inch and had ¾-inch holes drilled through it so as to fasten it to the axle, which was made of 1-inch square iron with the ends made round and a collar welded at the inner end of the bearing to hold the wheel. A 2-inch oak block was placed between the axle and the pipe, and was made high enough to raise the pipe above the wheels. One wheel I bought of a junk dealer for 12 cents and the other I had made for 4 cents a pound at a foundry. The shafts of the truck are reduced to ¾-inch pipe at the second cross bar. The cross bars and legs are made of ¾-inch pipe. A left hand thread on one end of the cross bar and in the tees at one side are needed to put the parts together readily. My truck measures 4 feet over all and was made to suit special work.

Well and Cesspool.

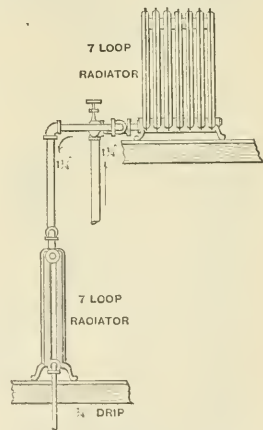
From W. H. R.—I would like to have *The Metal Worker* or its readers give some information about a cesspool which I dug 30 feet from a well. The water in the well became riley. The ground is of clay and sand and level. I am not experienced in this kind of work, and would like to know if the cesspool would affect the well, and what is the best thing to be done in such a case.

Answer.—The answer to this question is very simple. The best thing to do is to stop using the water in the well immediately. It is in every way dangerous to have cesspool and well so close together, as the contents of the cesspool will percolate through the ground, especially if it is soft material, such as our correspondent mentions, and will pollute the well in very short order. Safe distances will depend upon the

depth of the well. It will be quite evident that a cesspool 10 feet deep and a well 10 feet deep, placed 50 feet apart, in soil in which the strata were horizontal, would not directly affect one another—that is, the seepage from the cesspool would not flow directly into the well, as it goes off at an angle from the bottom of the cesspool. It would, however, be liable to contaminate the general water supply, and thus in an indirect way foul the water in the well. A hundred feet is none too distant for a cesspool, and, wherever placed, the safe plan is to cement the cesspool tight and clean it frequently.

A Rustic Steam Connection.

From TRANSLANTED, *New York.*—Herewith is a sketch of some work that was done to a steam heating system in connection with a steam boiler that was installed by a New York firm in a country residence. After the job had been completed and used some time the owner desired an extra radiator for his conservatory and employed a country plumber to make the necessary connection. He made one valve serve for two radiators by putting a 1½-inch T between the radiator and the valve, leaving the side outlet on the T horizontal. From this outlet a pipe was run with a downward pitch to the conservatory, and connected with a seven-loop radiator, as shown. He then took a 1-inch drip pipe and let it discharge the condensation from the radiator into the grounds. As a result nearly all the



A Rustic Steam Connection.

water was run out of the boiler, and the owner had to fill his boiler with water twice a day before we received an order to investigate the trouble and correct it.

Cement for Marble and Basins.

From F. H. W., *Cortland, N. Y.*—In *The Metal Worker* of March 9 "E. S. N." asks for a cement for fastening bowls to slabs. If he will take dry white lead and mix with varnish, then set the parts close together and clean with waste and gasoline, he will have a job that will not give him any trouble, either from staining the marble or from cracking loose.

STEAM AND HOT WATER.

Hot Water Heating Plant at Oregon State Reform School.

The hot water heating plant in the Oregon State Reform School at Salem,

architect, under whose supervision it was completed. F. H. Bryant, the engineer of the school, was appointed to look after the carrying out of the heating contract in the interest of the

ment of the building with the flow and return mains, the boiler being set in a cellar under the basement. Fig. 2 shows the plan of first floor, with the size and location of the radiators. Fig.

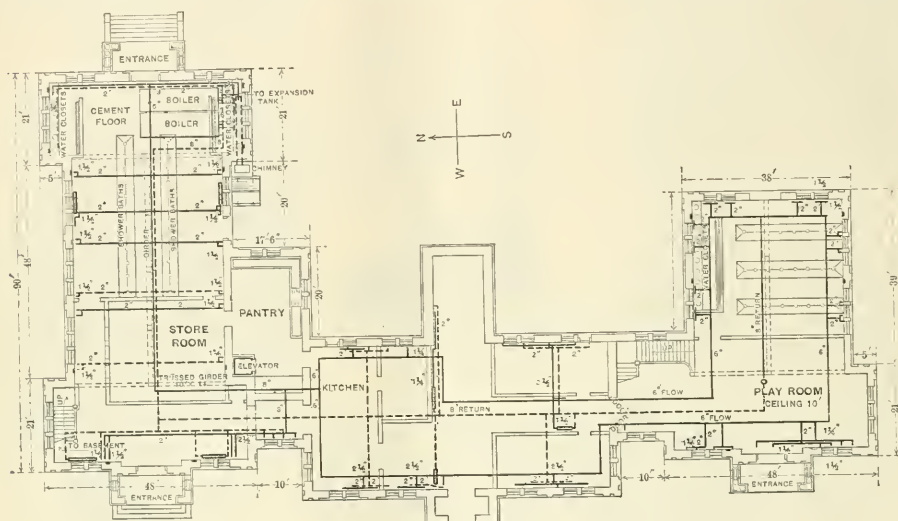


Fig. 1.—Plan of Basement, Showing Flow and Return Mains.

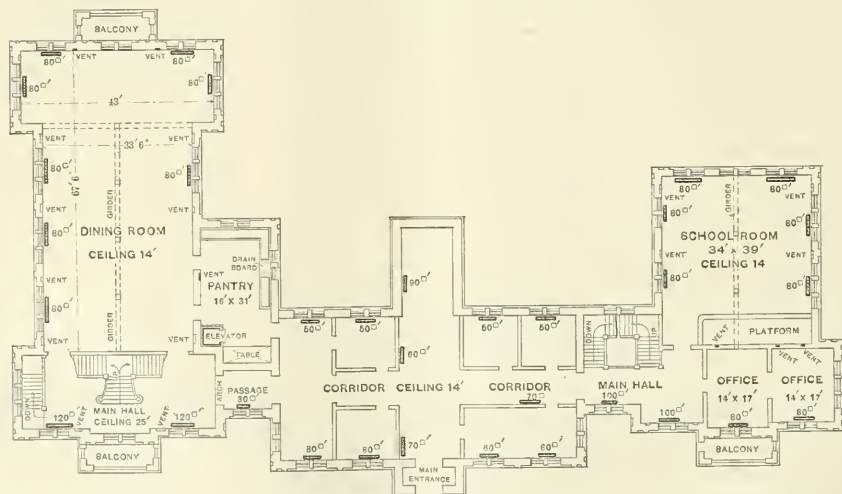


Fig. 2.—Showing First Floor and Location of Radiators.

HOT WATER HEATING PLANT AT OREGON STATE REFORM SCHOOL.

Ore., will be of special interest to our readers, as it is said to be one of the largest hot water plants on the Northwest Coast. The building was erected from plans made by W. C. Knighton, the

State. The constructing engineers who erected the plant are the Dugan Bros. Plumbing & Heating Company, 59 Main street, Salem, Ore.

Fig. 1 shows the plan of the base-

3 shows a similar plan of second floor. Fig. 4 shows third floor, only a portion of the north wing being heated.

The system of heating is of the low pressure type with the expansion tank

placed in the rear tower of the main building. Two 48 inch x 16-foot horizontal steel boilers are used, each having 68 3-inch tubes. The boilers were made by the Kewanee Boiler Company, Kewanee, Ill., and are rated to carry 22,000 square feet of radiating surface. The boilers are set side by side in brick work, but independent of each other. The smoke, instead of being taken from the front of the boiler is carried from the top of the boilers under a brick arch and connected with the main flue

dining room on the first floor and the stage on the second floor.

Fig. 6 shows the method of connecting the return mains to the boiler. A 3-inch return from the radiators in the dining room and stage connects into the 6-inch horizontal main at one end, with a connection on it which receives the pipe from the expansion tank. The 8-inch return main from the radiators in the principal part of the building runs into two 6-inch branches which connect with the boiler, as shown.

into an 8 inch return pipe, where it drops down. This is carried underground to the sub-basement in the north wing, there to be suspended from the joists, and is taken to the boilers, where it is connected as shown.

Where branches are taken from the flow main in the north wing the connections are made as shown in Fig. 7. This character of connection was adopted to prevent the main from being robbed of the hottest water so near to the boiler, and to aid in securing a

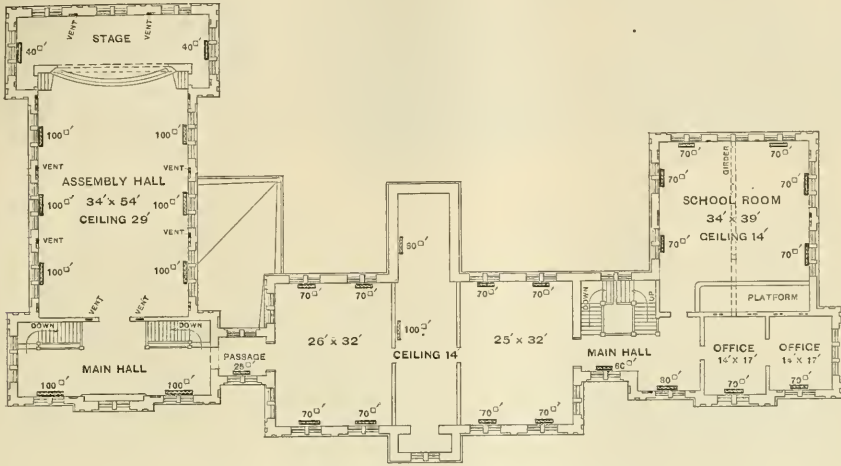


Fig. 3.—Showing Second Floor and Location of Radiators.

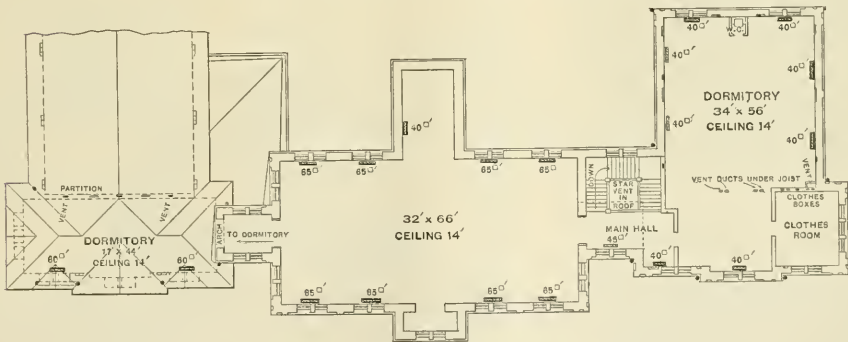


Fig. 4.—Showing Third Floor and Location of Radiators.

HOT WATER HEATING PLANT AT OREGON STATE REFORM SCHOOL.

at the rear. By this method it is claimed that a lower temperature is shown in the smoke flue than in the flow mains from the boiler. A smoke flue 30 x 30 inches and 70 feet high has been constructed for the use of the boiler alone. All the connections between the two boilers are such that either one may be used independently of the other. A special arrangement has been made for cleaning the flues.

A 6-inch flow main is taken from the top of each of the boilers, as shown in Fig. 5. These merge into an 8-inch flow main, which is used to heat the principal part of the building. A 3-inch main is taken from the 6-inch horizontal main to heat the back part of the

A thermometer is placed on the flow main at the point where the 8-inch pipe begins. The 8-inch flow main is carried directly upward from the top of the boilers in the cellar to the ceiling of the basement, and is then run along the ceiling, as shown in Fig. 1, having a downward pitch. The main continues 8 inches in size the whole length of the north wing, making a turn to the main building, where it is divided into two 6-inch branches, a twin ell being used at the branch. One of these branches runs to each side of the main building. They continue until the south wing is reached, where they make right angle turns and run toward the back, where they run toward each other and merge

higher temperature in the radiators further along the line. In the south wing the branches to the risers are taken from the top of the main, and the return pipes from the radiators are connected into the side of the main, as shown in Fig. 8. The basement radiators are fed by the return from the radiators directly above them, the connection being made at the top and the return at the bottom, as shown in Fig. 9. The valves and by-pass shown in Fig. 9 are intended to be used when no circulation is desired through the radiator.

In the north wing and main building the returns from the radiators are carried directly into the 8-inch return

main, but in the south wing the flow and return pipes are connected with the 6-inch flow main, as shown in Fig. 8.

Each set of rising pipes, both flow and return, is provided with an open way valve and bleeder, which permits of any set of radiators being shut off and disconnected when desired without affecting the working of the plant. There are 82 radiators distributed throughout the building, and when the plant is in operation, with the water at 120°, a remarkable evenness is shown in the temperature of the different radiators. The radiators in the south wing at the extreme end, a distance of over 270 feet from the boilers, are practically as warm as those nearer the boiler.

All the radiators are tastefully decorated with a maroon enamel and gold, and Chicago quick opening valves are used in connection with them. Previous to the erection of the north and south

Circuit Systems of Hot Water.

From SAMUEL HEINS, *Rondout, N. Y.*—I would say a few words on the circuit system of hot water as "Piper" Illinois, in *The Metal Worker* March 23 asked such a foolish question and wants to know if it is practicable to pipe hot water heaters on the one-pipe system. I will tell him no. There are scarcely two jobs out of every ten that will work satisfactorily unless put up by an expert. It is the most difficult method of heating a dwelling, and where it would heat one dwelling it would not heat another; it is according to the location. I never approved the one-pipe system, for I am a great advocate of the two-pipe system all the time, though I have seen one-pipe jobs work very satisfactorily and I have done a great many jobs on that system;

that the radiator nearest to the boiler or heater becomes hotter than those at the extreme end. I may say, where a circuit system is properly proportioned there may be satisfactory results. It may be like some jobs that are now installed in dwelling; some work perfectly, while others work very unsatisfactorily because the job was done by men who never served an apprenticeship at the business. Some time ago, in Palmyra, N. J., I was called to a house to make an examination of a steam heating job. In the first place, the man who did the work was an artist who owned the house, and he thought he would save a little money by doing the job himself. After doing the job (and he thought he was a steam fitter) it would not work and he tried for a couple of months to make it work. As he was using a ton of coal a week and not getting satisfactory results from

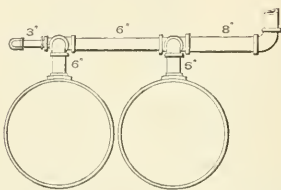


Fig. 5.—Showing Method of Connecting Flow Mains.

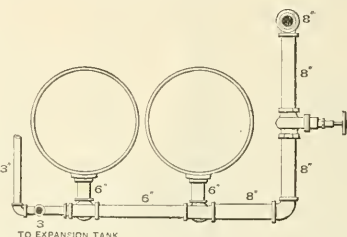


Fig. 6.—Showing Method of Connecting Return Mains.

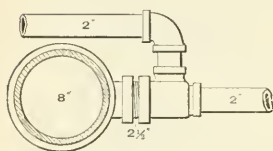


Fig. 7.—Flow Main Branches in North Wing.

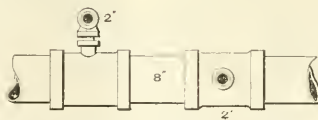


Fig. 8.—Flow Main Branches in South Wing.

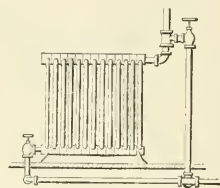


Fig. 9.—Method of Connecting Basement Radiators.

HOT WATER HEATING PLANT AT OREGON STATE REFORM SCHOOL.

wings the main building was heated by steam, but when the new buildings were completed, the hot water plant was substituted. The work of installation was completed in September and the plant turned over to the State officials, who, after the cold weather had tested the plant, expressed their approval of the job in letters sent to the Dugan Bros. Plumbing & Heating Company. One letter signed by the Board of Trustees of the Oregon State Reform School, consisting of Governor Sylvester Penney, Secretary of State George W. McBride and State Superintendent of Public Institutions E. B. McElroy, spoke of the contract, which amounted to \$15,200, having been completed to their utmost satisfaction and to the satisfaction of all concerned, and a second letter, signed by R. J. Hendricks, superintendent of the Reform School and F. H. Bryant, engineer, refers to the excellent workmanship shown in the job and its economical consumption of fuel, it taking, in their belief, "less than half the wood that a steam plant heating the same rooms would require."

but you cannot get as good results from the one-pipe system as you can from the two-pipe system. If a person wants a cheap job, use the one-pipe system; if they want the most perfect job, use the two-pipe system. Let me say to "Piper," if he is not a thorough mechanic in this line of work do not undertake it. If he does he will make a failure out of it; he would have to use much larger pipe. In proportioning circuit mains I would use the area of 1 1/2 inch pipe for each 100 feet of radiation, which I consider better proportion. The answer given to "Piper" says: "The main has a considerably larger area than the connections to the radiators, permitting the water which is returned cool from the radiators to flow along the bottom of the main without influencing the hotter water in the upper part." The same may be said of the one-pipe system of steam heating; the steam being so much lighter it passes along the top of the pipe while the condensed water, as it may be called, passes along the bottom of the pipe. It stands to reason, therefore,

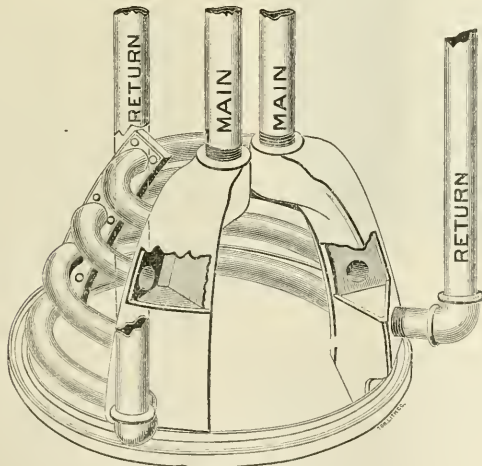
it he thought he would give up the job as a steam heating plant and make a hot water heating job out of it. He put an expansion tank on top of the highest radiator. Instead of setting it on the shelf above the radiator he thought it would answer if he made a shelf out of the radiator. After spending another week he made a complete failure out of it and I was called to see what was the cause of getting so little heat and using so much coal. In my examination I found he had pockets and depressions in all the pipes. I also found that he did not have his connections to the boiler right. He used all elbows instead of 45° elbows. I must say it was a "holy terror." After all of his hard work and many a day of cursing and skinned knuckles he had to acknowledge he would not make a steam or hot water fitter. It cost him \$125 to overhaul the plant and he had to pay a mechanic to do the work. It is the same with work done by men who profess to know something about this kind of work and claim to be steam and hot water fitters and could not tell how

much water 1-inch pipe 3 feet long would hold, or the difference between a high pressure and a low pressure plant. There is a great deal to learn before a man becomes a steam and hot water fitter. I claim that the circuit system of hot water heating is only in its infancy, and it will require a great deal of hard work and a clear head to make it work perfectly. No one-pipe system will give as good results as a two-pipe system, and not only that but it is a much easier work to put in a two-pipe system than it is to put in a one-pipe system. In many cases alterations have to be made before satisfactory results are obtained. I would like to hear further from my fellow workmen on this subject, although I don't believe it will be used to a great extent.

Bigley's Patent Hot Water Heater.

The Brand Stove Company of Milwaukee, Wis., and 77 Lake street, Chicago, have secured the sole agency for the United States of the Bigley hot water heater, which is herewith illustrated. This hot water heater is designed to be used with a warm air furnace in combination heating. It is so shaped as to fit above the fire in the furnace, so that no coal or ashes gather round it to interfere with its heating surface. It is made in three sizes, so that it can be fitted to almost any warm air furnace. It is not necessary for the heater to rest on the fire pot, as the mains and returns will keep it in position.

As will be seen in the illustration, the heater is cone shaped, having two inlets and two outlets. Partitions are

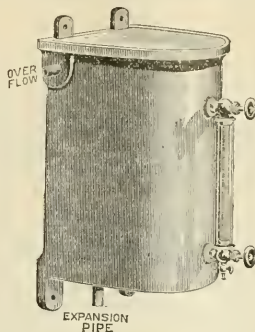


Bigley's Patent Hot Water Heater.

placed between the heads, as shown in the parts broken away, so as to cause reverse circulation of the water passing through the heater and increase the velocity of the water in its circulation. Resting in the center of the hottest part of combustion, it is apparent that even a small fire in the furnace will have an effect on the water in the heater. It is made of cast iron, in two pieces, having but one joint, which is securely bolted together, rendering the heater steam and water tight. Each heater is tested to 150 pounds pressure. They are built strongly so as to be durable.

Vanderman's Expansion Tank.

The expansion tank shown herewith is manufactured by the Vanderman Plumbing & Heating Company, Willimantic, Conn. This tank is designed



Vanderman's Expansion Tank.

to avoid the offsetting of pipes, which is required where the ordinary round tank is used. It is made of cast iron, in two pieces, joined together with a durable joint in such a manner as to make it practically a one-piece tank. It is attached to the wall by means of projecting lugs, drilled to admit screws or other fastenings. This arrangement dispenses with the use of brackets or shelves and permits connections with the tank to be made at the wall, instead of carrying them to the center of

Before leaving Gurney & Company Mr. Armstrong was presented with a handsome marble clock by the staff of that firm, and both employers and fellow employees joined in wishing him success in his new venture.

HEATING NOTES.

On the morning of Tuesday, April 2, the workshops of the Illinois Safety Heating Company were partly destroyed by the disastrous fire which visited St. Charles. A number of valuable drawings and patterns of the company's new heater were consumed. Temporary quarters have been secured and the company hope to get their samples ready for exhibition within three or four weeks. The fire is supposed to have been caused by tramps lodged in an adjoining mill. Seventy-five thousand dollars' worth of property, mostly owned by stockholders of the company, was consumed.

THE project of Councilman Downie to heat the school buildings of Cleveland, Ohio, with natural gas has been abandoned.

THE DIAMOND BOILER COMPANY, Holliston, Mass., distribute illustrated catalogues of the Diamond horizontal tubular boiler of their manufacture. These boilers are illustrated by general and sectional views, also detailed views of the connections as well as special views of the individual sections, altogether presenting it very thoroughly. Along with the illustrations are complete descriptive particulars, so that any one can get a full comprehension of the design and operation of the apparatus. The boilers are made in seven sizes, with the grates 16, 19, 23, 27, 32, 38 and 48 inches wide, and with these different widths of grates they are built up with various numbers of sections which give, altogether, nearly 50 capacities of boilers to choose from.

THE AMERICAN DISTRICT STEAM COMPANY, Lockport, N. Y., have just received a contract to extend the big steam heating system which the company put into Scranton, Pa., last year. The contract is for \$25,000. A smaller extension will also be put into Wilkes-Barre, Pa.

W. M. MACKAY, the manager of the steam and hot water department of Hart & Crouse, Utica, N. Y., at 211 Water street, New York, was furthering the interests of the Royal line of steam and hot water boilers at Washington, D. C., this week.

N. E. FROST of the New York office of Smith & Winchester, Boston, visited the steam and hot water heating trade in Philadelphia this week in the interest of the Winchester boiler.

THE SHOW WINDOWS at 61 Gold street, New York, bear the lettering: "W. H. Page Boiler Co., Alexander Don, Manager. Volunteer, All Right, and Sectional Steam and Hot Water Apparatus."

THE PLANS and SPECIFICATIONS for replacing the steam heating apparatus at the Mission Church of the Redeemptorist Fathers, Tremont street, Boston, with a hot water heating apparatus were made by W. M. Mackay. Several bids were received for heating the building, and the contract has been awarded to T. B. Cryer & Co., 11 Division street, Newark, N. J., who will use two large size Royal heaters and 6075 square feet of radiating surface. The heating plant will be in-

the tank, as in the old custom. The tank has the usual number of inlets and outlets and is furnished with or without water gauge, as desired. Patents on this device are pending. The tank is made in four sizes, viz., 7, 10, 12 and 15 gallons.

FRED. W. ARMSTRONG, late "heating engineer" of the Gurney foundry, Toronto, has severed his connection with that firm and entered into partnership with Messrs. Worthington & Garratt, plumbers, Bay street, Toronto.

stalled under the supervision of Mr. Mackay.

THE S. WILKS MFG. COMPANY, 113 to 123 Clinton street, Chicago, report large sales of hot water heaters, particularly those of large size. Their sales for March were double those of the corresponding month of the previous year.

T. C. Joy & Co., Titusville, Pa., are issuing a 40-page catalogue on enameled paper with a yellow enameled cover. A design is used on the first cover in which their firm name is incorporated and their new Zenith radiator is shown. A feature of the design is the words "Practical Tests." On opening the book, it is found that the practical tests allude to half-tone engravings showing numerous large buildings in different cities of the United States in which their loop and flue radiators have been used.

The New Rococo Radiator.

The American Radiator Company have just added to their extensive assortment the new Rococo three-

for heating and ventilating the new Brookline High School, a \$350,000 building. A feature of the heating will be a coil of 7000 feet of 1-inch pipe, into which fresh air is received, heated and distributed throughout the building. Four 200 horse-power boilers have also been put in.

Charge for Boxing and Cartage.

When a Chicago importer gets a bill for goods shipped from London, says the *Tribune* of that city, he finds charged up to him the cartage and the box in which the goods are shipped—perhaps even the nails and the iron strip with which the box is held together.

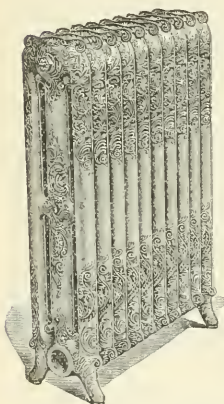
"I think this practice is the correct one," said a local importer. "It is the product of a higher commercial development than ours—a better, more thoroughly organized system. It is a system in which the element of guessing in figuring up a year's income and expenditures is practically eliminated. The practice prevalent in this country of selling goods f.o.b. is not the sound

a box down to the very nails and then charging it up. If he did this, moreover, his customer would probably think him small and close fisted and be inclined to take his trade somewhere else.

"I believe in our glorious institutions; I spent three years fighting for them some 30 odd years ago; but I am not blind to the fact that our British cousins do a good many things, particularly in the commercial line, better than we do. It is this very close fistiness, if one chooses to call it so, this dealing on close margins, that has helped them into their domination of the entire commercial world. Science is accuracy in business as in everything else. The man who succeeds is the man whose aim is true, who, like the Benjamin slingers, can throw at a hairbreadth and not miss. He doesn't guess or approximate, particularly in the matter of expenses."

New York Trades School Badge.

An effort has been made by the graduates of the different classes of the New York Trades School, Sixty-seventh street and First avenue, New York, to



The New Rococo Radiator.—Fig. 1.
—General View of Radiator.

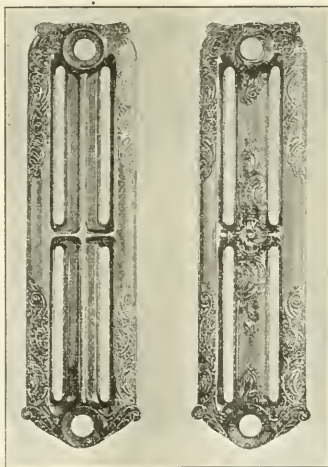


Fig. 2.—Middle and End Loop of Radiator.

column radiator, for steam and water, a general view of which is shown in Fig. 1, while views of the middle and end loops are shown in Fig. 2. Each section of 38 inches in height contains 5 square feet of heating surface; width, 10 inches; length occupied in stack, 2½ inches. Two-inch nipples are used in connecting the sections. The construction is such that in the outer tubes, where the greatest demand is made for heat to be imparted to the surrounding air, there is a larger body of water; while under the center column or veiled surface, where there is less demand made for heat, there is less water space in the tube. The shape of the section is convex and is trussed from the outer columns to the center one, to increase strength. A descriptive circular and price-list of the Rococo will be forwarded on application to the American Radiator Company, 111-113 Lake street, Chicago.

KENRICK BROS., Brookline, Mass., are rapidly completing their contract

one, and every necessary expense which is 'thrown in' by the seller as an inducement to the buyer marks a step in the wrong direction. And if there is any profit in this way of doing business it goes not to the buyer, as he may imagine, but to the seller, because the latter, in figuring the price of an article, is sure to make a liberal allowance on his side of the fence to cover the cost of this concession. He has never estimated exactly what a box of given dimensions does cost him, but he will make a guess at it in establishing prices which is sure to cover it and a little more.

"The practice comes not from any desire to make money in boxes, I think, but from the large handed way of doing things in this country. In older countries, like England, men are content with earning smaller percentages on their investments and they figure more closely, while in the United States the average business man looks for much larger returns and thinks it a waste of time to be getting the cost of

secure some means of continuing the acquaintance formed at the school and of identifying each other. This aim has met the approval of the trustees, who, to aid in attaining the object, have adopted the badge shown in our illustration, and which can be procured by such members of the classes as desire to be identified with the school after they have left it and become engaged in work at their several trades. Our illustration is of the same size as the badge, which can be furnished in three different styles. One style is silver and will be sold at 75 cents. Another style is heavy gold plate, which is sold at \$1.25. It is also furnished in gold at \$2. Members of past classes can secure the badge bearing the date 1895, while future classes will be provided with a badge bearing the date of the year in which they graduate.



New York Trades School Badge.

The Navy Department at Washington has issued the following statement of the present condition of the new United States war vessels. The figures represent the percentage of completion: "Amphitrite," 99 per cent.; "Maine," 98 per cent.; "Terror," 96 per cent.; "Texas," 95 per cent.; "Indiana," 93 per cent.; "Massachusetts," 90 per cent.; "Katahdin," 90 per cent.; "Oregon," 89 per cent.; "Puritan," 87 per cent.; "Monadnock," 85 per cent.; "Brooklyn," 42 per cent.; "Iowa," 35 per cent.; Gunboat No. 7, 31 per cent.; Gunboat No. 9, 26 per cent. and Gunboat No. 8, 25 per cent. Since January 1 the "Minneapolis," "Cincinnati," "Raleigh," "Olympia" and "Ericsson" have been taken from the list of uncompleted ships. All have been commissioned and put into regular service except the "Ericsson." The "Amphitrite" will be commissioned next week, leaving but 14 naval vessels under construction.

TIN PLATES.

Tin Plate Calculations.

The unprecedented drop which has taken place within the last year or two in the price of tin plate has rendered practically useless all tables previously published for the calculation of prices, weights, &c., any rate below \$4.50 a box for full weight, 14 x 20, 1C plates not having been contemplated by the compilers of such tables. For this reason a circular recently issued by the American Tin Plate Company, Elwood, Ind., containing rules for calculating prices, weights and quantity of tin plates, is very timely and will be found extremely useful to the trade. The rules given therein, which we print for the information of our readers, are as follows:

Base Box Tin Plate.

112 Sheets, 14 x 20, 280 inches per Sheet,
31,360 inches per Box.

Weight.....	100 pounds.
1C.....	108 pounds.
1X.....	136 pounds.
1XX.....	157 pounds.
1XXX.....	178 pounds.
1XXXX.....	199 pounds.

Prices.

Rule to Find the Price of a Given Box of 112 Sheets.

Multiply the number of square inches in the given sheet by the base price. Divide the result by the number of square inches in the base sheet. Result will be the price of the given box.

Rule to Find the Price of a Given Box of More or Less Than 112 Sheets.

Multiply the number of square inches in the given box by the base price. Divide the result by the number of square inches in the base box. Result will be the price of the given box.

Rule to Find Base Price, when Value is Stated, of a Given Box of 112 Sheets.

Multiply the number of square inches in a base sheet by the price of the given box. Divide result by number of square inches in the given sheet. Result will be the base price.

Rule to Find the Base Price, when Value is Stated, of a Given Box of More or Less Than 112 Sheets.

Multiply the number of square inches in a base box by the price of the given box. Divide result by number of square inches in the given box. Result will be base price.

Weights.

Rule to Find the Weight of a Given Box of 112 Sheets.

Multiply the number of square inches in the given sheet by the base weight. Divide the result by the number of square inches in the base sheet. Result will be weight of the given box.

Rule to Find the Weight of a Given Box of More or Less Than 112 Sheets.

Multiply the number of square inches in the given box by the base weight. Divide the result by the number of square inches in the base box. Result will be weight of the given box.

Rule to Find the Weight of a Base Box When the Weight of a Given Box of 112 Sheets is Stated.

Multiply the number of square inches in a base sheet by the given weight. Divide the result by the number of square inches in the given sheet. Result will be the base weight.

Rule to Find the Weight of a Base Box When the Weight of a Given Box of More or Less Than 112 Sheets is Stated.

Multiply the number of square inches in a base box by the given weight. Divide the result by the number of square inches in the given box. Result will be the base weight.

Quantity.

Rule to Find Number of Base Boxes in a Quantity of Given Boxes 112 Sheets Each.

Multiply the number of square inches in the given sheet by the number of boxes of the given size. Divide the result by the number of square inches in the base sheet. Result will be the number of base boxes.

Rule to Find the Number of Base Boxes in a Quantity of Given Boxes of More or Less Than 112 Sheets Each.

Multiply the number of square inches in the given box by the number of boxes of the given size. Divide the result by the number of square inches in the base box. Result will be the number of base boxes.

Rule to Find Number of Given Boxes, 112 Sheets Each, in a Quantity of Base Boxes.

Multiply the number of square inches in a base sheet by the number of base boxes. Divide the result by the number of square inches in the given sheet. Result will be the number of given boxes.

Rule to Find Number of Given Boxes of More or Less Than 112 Sheets Each in a Quantity of Base Boxes.

Multiply the number of square inches in a base box by the number of base boxes. Divide the result by the number of square inches in the given box. Result will be the number of given boxes.

SCRAP.

THE PHILLIPS TIN PLATE COMPANY, Philadelphia, Pa., are issuing notices to the trade inviting them to visit their works and inspect their various grades of tin plates, cards of admission being obtainable at their office, 918 Filbert street, Philadelphia, Pa.

THE TIN PLATE MILLS at Briton Ferry, South Wales, were all closed down last week on account of the refusal of the workmen to accept a further reduction in wages. At Morriston 800 men have been thrown out of work owing to the closing of the Dyffryn Tin Plate Works, and 600 men through the stoppage of the works at Worcester and Upper Forest. The Birchgrove and Foxhole works in that district are also idle. Those of the Beaufort Tin Plate Company are reported to be the only Morriston works running with any regularity.

THE Western Mail of Swansea, Wales, reports that a dozen tin plate workers left Liverpool for this country last week, and that a similar number were about to start in the course of a few days.

A CORRESPONDENT of the Iron and Steel Trades Journal of London, writing from Venice, Italy, says that the import of English tin plates, formerly in great demand, has fallen off very materially, owing to the starting in Lombardy and at Piombino of some large tin plate mills. The English

prices, together with the freight and import duty, are, he says, preventing all business. The cost of Italian tin plates, all charges included, at destination is about \$2.50 per box of 112 pounds, whereas the import duty on similar English tin plates is as much as \$1.75. Consequently all competition with the local product is for the present out of the question. Thus another country is becoming self-supporting in the matter of tin plates. It was noted a short time ago that the tin plates made in Spain were ousting the British product from the markets of that country.

THE SCOTTDALIE IRON & STEEL COMPANY, Limited, Scottdalie, Pa., manufacturers of fine iron and steel sheets, added one cold mill to their plant last summer and a second last month, and are now at work on a third. All these mills have been built by the A. Garrison Foundry Company of Pittsburgh. The one now under construction is expected to be in operation not later than April 15 next. These mills are turning out a high grade of finished sheet. The six hot mills of this concern are in full operation, and also their muck and bar mills. This firm roll all their own sheet bars, the sheet mills using the entire output of the bar mill.

SOME of the Welsh tin plate workers have taken service abroad are showing practical sympathy with their distressed brethren in Wales by forwarding subscriptions to the relief fund maintained at home. Those at the new tin plate works at Bilbao, Spain, send regular monthly remittances for this purpose.

THE BRITISH BOARD OF TRADE returns for March show that the total exports of tin andterne plates from British ports during the month amounted to 30,000 tons, as against 25,000 tons in March, 1894, and 33,000 tons last February. Of this amount 18,000 tons were sent to the United States, as compared with 23,000 tons in February last and 16,000 tons in March, 1894.

IT IS ANNOUNCED that a company has been formed in England with a capital of \$180,000 to carry on the manufacture of tin plates in Hungary. Among the promoters are several well known names in the Welsh tin plate trade. Labor is cheap in Hungary, and the trade in tin plates in the Danube region is considerable. Consequently the venture promises to be remunerative. The proposed establishment of fresh competition abroad by their own countrymen has aroused an indignant feeling among the Welshmen. The Industrial World, the organ of the Welsh Tin Platers' Union, bitterly comments on the manner in which a number of their manufacturers are promoting the manufacture of tin plates in foreign countries hitherto supplied by Wales and so helping to kill their home industry.

SOME CORRESPONDENCE has been going on lately in the British trade papers in regard to a suggestion made by one of the largest tea merchants in England that tin plates might be used with ad-

vantage for packing tea. The balance of opinion seems to be, however, that tin would be too expensive for this purpose. Chests made of lead coated plates are cheaper, and there is always a ready sale for the old chests of this description. These are sent to works where the lead is remelted and run into bars again, whereas old tin chests could not be so readily utilized. Heretofore, as is well known, tea has been packed in wooden chests lined with lead, but the timber for this purpose is said to be becoming scarce. Tea growers are therefore casting about for some substitute, and the question seems to lie between leaded or tinned plates for the boxes. In regard to the growing scarcity of timber, a correspondent writes to the London *Ironmonger*, stating that in the tea growing districts of India 12 or 14 years ago the planters had only to go about 10 or 15 miles for the timber to make the chests. Now it is becoming so scarce that they have to go up country for 150 or 200 miles for their supplies. The need, therefore, of other material is growing urgent.

THE WORKS OF THE Foxhole Tin Plate Company, Llanmallet, South Wales, were restarted this week.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., have just completed arrangements for building an addition of five mills and eight tinning stacks.

THE EFFECT of the lately increased use of American tin plates is seen in the Treasury returns of imports for February, which show that only \$785,397 worth of foreign plates were entered for consumption during the month, as compared with \$1,007,366 worth in February last year, notwithstanding the fact that the general consumption of tin plates was, if anything, larger than a year ago, and also that a reduction in the duty on foreign plates has taken place in the interval.

THE ELLWOOD TIN PLATE COMPANY, Ellwood City, Pa., has begun work on a new pickling room 40 x 60 feet in size.

THE NEW TIN PLATE COMPANY, recently referred to as about to establish a third tin plate plant at Elwood, Ind., will, it is announced, begin its erection at once. The works will employ about 300 men.

The Situation in Wales.

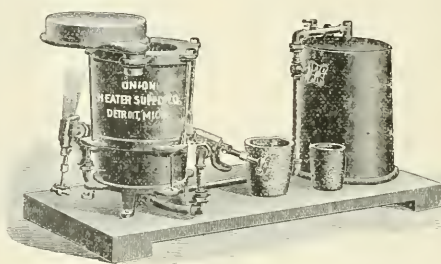
A member of a prominent tin plate importing house in New York City, who has recently returned from a trip to England, in speaking of the condition of the tin plate trade in that country, as he found it, said that he was somewhat surprised to find that the trade did not appear to be by any means in as desperate a condition as it is generally pictured. In Liverpool the tin plate brokers were very busy, and the feeling seemed to be quite hopeful. It is hardly realized on this side that the United States is not the only market for British tin plates. They are shipping considerable quantities of plates to Australia, South Africa, Russia, Argentina and many other quarters and these markets are growing. Moreover, the home demand in Great Britain—a factor which is generally left out of account—calls for quite a large volume of plates. Together with the shipments still being sent to this country, a very considerable trade is thus left in the hands of the British manufacturers yet, and they are pushing it for all it is worth. There will be enough

work for about all the mills now in operation in South Wales. It is probable, however, that those which have closed down will not restart for a long time, if ever. A number of mills whose location at a distance from shipping points renders them at a disadvantage in regard to others more favorably placed will probably have to go out of business altogether, but the others are likely to go on indefinitely. The distress among tin plate workers, although sufficiently acute in a few districts, is neither as serious nor as widespread as would be supposed. The wage question is, apparently, the only obstacle to the continuation of a fair business in the Welsh trade throughout this year. The more distant future is not so clear.

THE WASHINGTON TIN PLATE COMPANY have been organized and will erect a tin plate plant at Washington, Pa. The new concern are composed of Wm. H. Griffiths, formerly of Cadwalader & Griffiths, and a number of capitalists. Plans are being prepared for a tin mill which will consist of a main building 100 x 175 feet, to be used as a rolling mill, an annealing and pickling department 60 x 70 feet, and tinning house 50 x 100 feet. The rolling mill building will be built of iron, while the remainder of the plant will be constructed of brick. Jackson & Evans of Pittsburgh are the designers and engineers, and will receive bids for the construction and entire equipment of the plant.

Gasoline Melting Furnace.

The accompanying illustration shows a melting furnace manufactured by the Union Heater Supply Company, De-



Gasoline Melting Furnace.

troit, Mich., intended for melting metals in small quantities. It is stated that it will melt brass in 20 minutes and other metals accordingly. The fuel used is gasoline which is stored in an air tight tank, shown at the right, and is forced to the burner by pressure by means of a small pump. The burners are mounted on double swivels which enable the user to withdraw the flames without putting them out while changing crucibles. These furnaces are used for all small work, and are especially adapted for pattern makers, being likewise employed, however, by assayers, jewelers, dentists and others.

Acting Secretary of the Treasury Hamlin, in accordance with the joint resolution adopted by Congress as to importing goods into the free zone of Mexico, has instructed customs officers that the privileges heretofore accorded in the transportation of merchandise without examination from the desig-

nated ports in the United States, as contained in Articles 442 to 453, inclusive, of the Customs Regulations of 1892, are suspended until otherwise directed, so far as they relate to goods consigned to places within the so-called free zone of Mexico. Goods destined for places in Mexico beyond the limits of said free zone may be forwarded, as heretofore, under the regulations cited. Merchandise consigned to places within the limits of the free zone must be entered and appraised at the port of original importation and may be forwarded under warehouse and transportation entry to ports on the frontier, where entry for exportation may be made in the usual manner.

Fire Losses in the Indiana Gas Belt.

Figures, compiled by one of the largest insurance agency companies operating in the Indiana gas belt, exhibit a very remarkable degree of growth in fire losses in that section within the last three or four years. The company in question have been doing business in Indiana for nearly 20 years, and their representatives have spent much time and pains in collecting statistics to explain the reason for this phenomenal growth in losses. It appears that for many years prior to December 31, 1891, the losses to the fire insurance companies in the Indiana gas belt were less than 44 per cent., while since that time they have more than doubled, and now exceed 89 per cent. The conclusion reached by the investigating company is that carelessness in the use of natural gas has been responsible for a large majority of the fires. The primitive methods of controlling the gas pressure in that region seem to be something extraordinary, it being estimated that,

in order to take advantage of cheap fuel, property owners sometimes connect the gas mains with flues built only for slow wood or coal fires. During the busy hours of the day the pressure would be turned on full force, and through carelessness at night, when the pressure would be heavy, its due regulation would not receive proper attention. The consequence of these conditions is that fire insurance rates in the Indiana gas belt have been raised to such a level as to prevent a great number of property owners and others from taking up insurance at all.

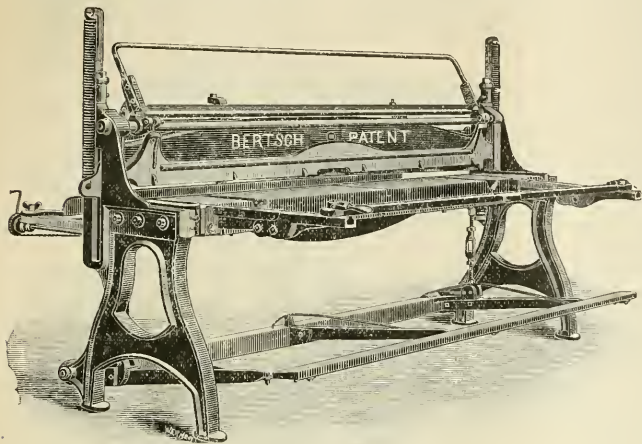
The announcement is made that the directors of the Edison Electric Illuminating Company of New York have decided to authorize the issue of \$15,000,000 one hundred-year 5 per cent. gold consolidated mortgage bonds, in order to extend the business of the company in the upper part of New York City.

ROOFING AND CORNICE.

Cornice Makers' Squaring Shear.

We show in the accompanying illustration a general view of an 8-foot squaring shear, known as No. 0, made

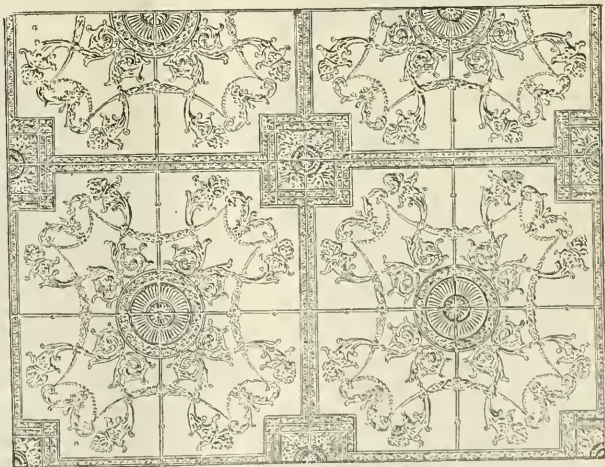
ends and bolted to the rear side of the legs directly behind the knife bar, making the entire machine and knife rigid. This is a particular advantage when the blades become slightly dulled, as the center bearing blocks are adjusted



Cornice Makers' Squaring Shear.

by Bertsch & Co., Cambridge City, Ind. The special features to which the manufacturers allude are their self balanced treadle with patent truss rod, patent quick opening, self locking hold down, patent shearing table adjustment and locking device and patent knife bar bearings. The treadle has an extensive counter weight on the rear side, which slightly overbalances and becomes an element in lifting the knife bar, which will require lighter springs, making it easier to operate. The arms that support the foot board are wrought iron and, with the patent truss rod, make the treadle light, strong and rigid. The spring supports are wrought iron and adjustable to suit the operator. The hold down is quick operating anywhere in front by the gas pipe handle. It is self-locking when down and self supporting when up, and it is especially mentioned that it is not in the way in either position. The blades can be seen at either end, and the shearing line at different places along the hold down, as there are half round openings along the lower edge for the purpose. The shearing table adjustment is composed of the usual set screw, which pushes the table toward the top blade, and a bolt that draws the table away from the top blade, permitting an easy adjustment of the shearing table forward or backward without hammering. When both are tightened a complete lock is formed, holding all parts rigid. The patent knife bar bearings are composed of two extra wedge shaped adjustable center bearing blocks that are planed and fitted to a heavy angle shaped cross tie, which is also planed and is fitted at the

downward, if required, by a temper screw to make the knife bar rigid in the center for heavy work, and in case the



A Sheet Metal Ceiling.

blades are dull and require closer adjustment in the center.

THE SLATE OPERATORS of the Bangor district in Pennsylvania are reported to be in the full tide of a good spring business. Reports recently obtained from the Bangor, Pen Argyl and

Wind Gap quarries show that more men are at present at work than at any time since the quarries were opened.

A Sheet Metal Ceiling.

We show in the accompanying illustration an example of the handsome ceilings manufactured by the Wheeling Corrugating Company, Wheeling, W. Va. The manufacturers allude to the many advantages of metal ceilings, they being water proof, fire proof to a large degree, and neither warping, shrinking nor cracking. The present forms of highly decorated ceilings are altogether different from the original corrugated sheets, from an artistic standpoint, the raised designs giving beautiful effects, as, for example, in the illustration presented. It is also said that metal ceilings are particularly valuable in churches, court rooms and theaters, on account of their acoustic properties, besides being non-absorbent and therefore of special use in stores, hospitals and other buildings where there are strict sanitary requirements. The Wheeling Corrugating Company have branch offices at 81 Fulton street, New York; 474 Laflin street, Chicago and Twelfth and Poplar streets, St. Louis.

FLASHINGS.

L. D. BERGER, 59 North Second street, Philadelphia, Pa., is distributing his 1895 illustrated catalogue and price-list of the extensive line of tinners' and roofers' supplies which he

manufactures. The pamphlet of over 90 pages is very profusely illustrated and shows an extended line of goods of interest to the trade. The first pages relate to tinners' trimmings; then come stove bolts, pipe hooks, hangers, conductor pipes, gutters, ridging, creatings, finials, conductor heads, tin shingles,

registers, stove shovels, furnace pipes, roofing, skylights, roofing tools, tinners' tools, &c. The above list chosen at random, indicates the range of work, many other articles being shown, however, besides those mentioned.

THE KNEISLEY & YELDHAM COMPANY, 68 to 74 West Monroe street, Chicago, are to furnish the galvanized iron cornice and bay windows for the residence of I. Solomon, 553 Grand avenue.

S. KEIGHLEY & Co., Pittsburgh, have just finished a very important job of ornamental galvanized iron work at Oakland, Cal., including the covering of the entire exterior of the large Casino Building now being erected in that place. The building is 300 feet long and 109 feet wide.

JAMES E. KELLY, New Haven, Conn., has taken the contract for the roof of the new power house of the Norwalk Tramway Company and also some work for the Norwalk Lock Company, whose work he has done for the last 28 years. Another big contract recently taken by Mr. Kelly is on the new building of P. & F. Corbin, at New Britain.

WE ARE IN RECEIPT of a photograph from A. L. Burtis, Lockport, N. Y., showing the front of his store. An awning over the front shows the word "Furnaces," and over the door his name appears on a neat sign, suspended from which is a large ball, which we presume is made of sheet metal, and made, too, in his shop. Both of the plate glass show windows are arranged with a display of elbows of different sizes and angles. On the sidewalk in front of the windows the photograph shows Mr. Burtis and one of his corps of assistants.

A CERTIFICATE OF INCORPORATION of the Troy Sheet Metal Company, Troy, N. Y., has been filed with the Secretary of State. The capital is \$10,000 and the directors are: Jesse D. Ennis and Robert J. Wylie of Troy and Frank H. Knox of Lansingburgh. The organization will succeed to the business of the White & Ennis Cornice & Roofing Company.

D. B. HILTON, sheet metal construction, skylights, &c., issues a notice to the trade under date of April 9 that, owing to the destruction by fire of his former factory, he has taken larger and more spacious quarters at 254-256 State street, between Boerum place and Smith street, Brooklyn, N. Y.

President A. B. Stickney of the Chicago Great Western Railroad has long been an advocate of the migration of working people from the cities to farms in order to relieve the congested condition of the great centers of population. He has now perfected plans for carrying out his own suggestion on lands which he has acquired near Stanton, Minn., on the line of the Great Western Railroad, about 36 miles below St. Paul. These lands will be divided into small holdings suitable for raising produce, and will be leased at low rates to married men with families from cities, who are willing to settle on them, the sole requirement being that they must keep the land in cultivation.

Edward Reis, manager of the Rosena Furnace, New Castle, Pa., has invented a pair of "explosion doors," meant to prevent the disastrous results which have followed the recent slips at that furnace. The new invention has been placed on the Rosena.

Trade Notes.

F. W. GREGORY & Co., 160 High street, Boston, Mass., have put on the market what they call the Boston Flux or Metal Purifier, which they claim cleanses and strengthens the iron and eliminates the carbon, phosphorus and sulphur. It is said to render the iron fluid and permits the use of a poorer grade with a large percentage of scrap.

THE ROOFING TRADE will be interested in the announcement made in our advertising columns by William F. Harvey, 701 Girard Building, Philadelphia, Pa., relating to the Amice brand of palm oil Process Plates.

THE IDEAL COMPANY, 36 Dearborn street, Chicago, Ill., manufacture a sewing machine which may be retailed at five dollars.

IN THEIR ADVERTISEMENT elsewhere in this issue the Oliver Wire Company, Pittsburgh, Pa., announce that they are prepared to furnish annealed, bright and galvanized Steel Wire, straightened and cut to any lengths, not exceeding 16 feet, for the manufacture of Brazier Rods, Stove Bolts, Oven Racks and other specialties and for tinners' use generally. The trade are requested to submit specifications and obtain prices on the above goods.

FRANK P. BOLAND of Providence has recently invented and patented an extinguisher for kerosene lamps and oil stoves, and a company for manufacturing it has been formed under the laws of the State of Maine, with a capital stock of \$500,000, and Alfred J. Hodder of Boston, as president, and Charles H. Kittredge as treasurer. The company are known as the American Burner Company.

JAMES A. MILLER & BROTHER, 129-131 South Clinton street, Chicago, Ill., owing to changes in their plant which compel them to move on May 1, will make special prices on their stock of Corrugated Iron which they have on hand and can be shipped before April 30.

THE WARREN FOUNDRY COMPANY, Warren, R. I., who formerly manufactured Stoves, have been sold out to other parties, and will be known in future as the Warren Foundry & Machine Company. The buildings have been enlarged and traveling cranes and other improvements have been added. The new company intend manufacturing high grade Machinery Castings, and the foundry will also be equipped with modern arrangements for the manufacture of Brass Castings of all descriptions.

THE NEW YORK ELECTRIC MOTOR & VENTILATOR COMPANY of New York City have been chartered at Albany with a capital of \$30,000. The directors of the new concern are Sidney Green of New York City and C. A. Sherman and Lincoln Vancott of Brooklyn.

IN THEIR ADVERTISEMENT elsewhere in this issue the Beaver Tin Plate Company, Lisbon, Ohio, announce that their plant is now in successful operation, and they are prepared to quote prices on Tin and Tinned Plates, which they guarantee equal to any in the market, and solicit inquiries of the trade.

A STRIKE for higher wages occurred last week among the tin workers at the factory of the Lalance & Grosjean Mfg. Company, at Woodhaven, L. I., about 100 men being involved. This is notable as being the first strike which has occurred at these works since the

company commenced operations, 30 odd years ago. It has been a short lived one, the men having re-applied for work this week. As the company had no pressing need for operatives in their Tinware department at the time, it was shut down, and only re-opened on Thursday, when some 30 or 40 of the men were taken back at the old scale of wages, which is said to be a little higher than that generally paid. None of the other departments of the works were affected, although a strong effort was made to incite a sympathetic strike. Lalance & Grosjean have the reputation of being very just and generous employers. During the hard times of last year the company kept their factory running almost continuously, solely in order to provide work for their people, and are said to have never allowed any of those dependent on them to suffer want. The recent strike was, therefore, heard of with some surprise.

P. H. KEEVAN of Kenosha, Wis., a manufacturer of Brass Goods, will locate in Lorain, Ohio. The site which has been offered him was formerly occupied by the Young Mfg. Company, besides which the necessary boiler and engines will be given to him. The new plant will employ steadily about 50 men.

THE NIAGARA FALLS METAL SIGN COMPANY have been incorporated with a capital stock of \$20,000 for the manufacture of Ornamental Signs, Figures, &c.

THE STEWART ENAMEL COMPANY are erecting a plant at Bellaire, Ohio, for the manufacture of Enameled Iron Sign Plates, Kettles and other specialties in Enameled Ware. The plant is expected to be ready for operation in May. This will be the only works of this kind in the United States.

AVRAULT BROTHERS & Co., manufacturers of Wyckoff Water Pipes, at Tonawanda, N. Y., have resumed operations again after having made a number of extensive improvements during the past winter.

THE GIRARD STOVE & FOUNDRY COMPANY, Youngstown, Ohio, have been very busy in their roll foundry, and have been running their machine shop night and day for some time. They have enough orders ahead to insure steady operations for some time to come. This concern report that they are in the market for a second hand roll 18th 30-inch swing, 12 foot bed, and a belt or steam power traveling crane, 25 tons capacity and 50-foot span.

LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, have just made a large shipment of Enameled Ware to Glasgow, Scotland, and another to Cristiania, Norway, in response to orders. The firm have also recently filled considerable orders for this ware from Australia and South America, with which countries they are doing a growing trade. In Brazil and the East coast of South America, in particular, they find an increasing demand for Enameled Household Utensils and Tinware.

A special meeting of the stockholders of the Union Storage Company of Pittsburgh was held last week, and the capital stock was increased from \$500,000 to \$750,000. Improved machinery and a better equipment for all kinds of storage will be placed in the present building, and a bond house, 20 x 120 feet, for Government export and import bonded goods, will be erected.

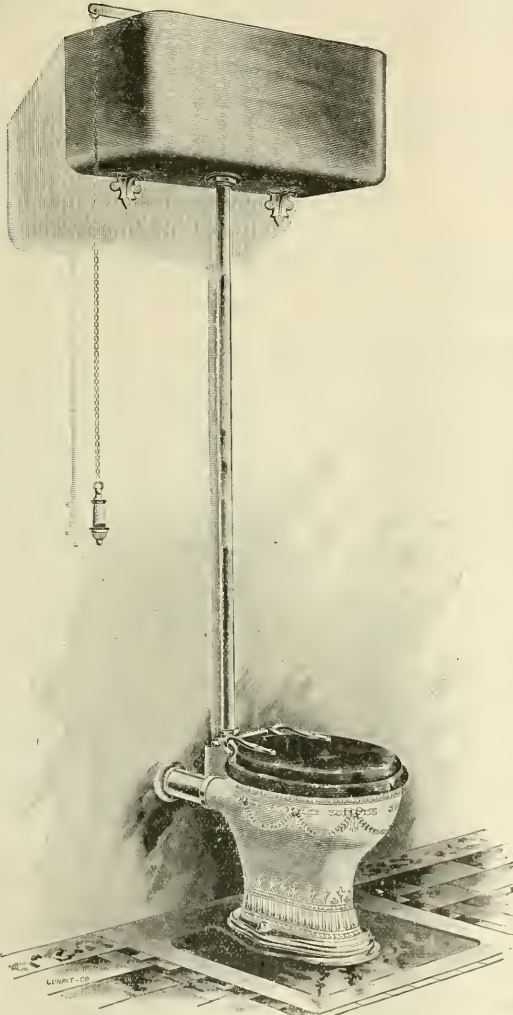
PLUMBING and GAS FITTING.

The Sanitas Crown Closet.

The Sanitas Crown closet, which is shown in our illustration, has just been brought out by the Smith & Anthony Company, 54 Union street, Boston, Mass., and is a worthy addition to the

noiseless. Another special feature of the closet is its sanitary seat. This seat fastens to the crockery by nickel plated arms, keeping the wood work well above the crockery, so that it cannot become foul in any way. The bowl and trap are combined, the

couplings and slip joints. All the wood work used is of high quality and finish. The Crown is the lowest priced of the Sanitas series, and is described as a remarkably fine finished article for the price. The Sanitas goods are carried in their New York store at 56 Beekman street and also by the Albene Stone Company, 217 Lake street, Chicago.



The Sanitas Crown Closet.

Sanitas series of closets, lavatories and traps. The Sanitas closets are all constructed on the jet principle, with the additional feature of a retarding chamber to hold the supply of water in the bowl. This is a patented feature of the Sanitas closets. The retarding chamber also acts as a deafener and makes the Sanitas Crown closet practically

surface of standing water being very large and at the most desirable distance from the seat. The water is very deep back of the closet, and is deepest at the point where the wastes strike. If a special vent is desired an unusually large one is provided with every Sanitas closet. Freedom from breakage is secured by using the Sanitas flexible

The Little Wonder Gas Bath Heater.

The accompanying illustration shows a gas bath heater put on the market by McCoshn & Co., 8 North Central avenue, Baltimore, Md. It is intended to



The Little Wonder Gas Bath Heater.

heat water by gas jets with a capacity of 10 gallons in from 15 to 30 minutes. The heater is nickel plated copper, and while it is simply strong enough to hold the water to be heated it is not intended to stand reservoir pressure. Three feet of rubber hose is furnished with each heater for connecting to the cold spigot, as shown in the illustration. The firm likewise make an all galvanized iron heater in the same style.

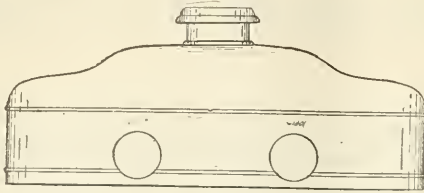
The Best Way to Calk Joints.

From JUNIOR PLUMBER, Newark, N. J.—I would like to learn from the readers of *The Metal Worker* the best way to calk joints in soil pipe so that they will stand the water test.

Note.—We know that our readers differ in their practice of making these joints, and we hope that they will describe their methods of making them, with their reasons. It is generally considered that care must be taken to get the spigot end of the pipe so located in the hub that the space will be equal all around the pipe. Then good even oskum is picked so that it is free from

lumps, and a rope about an inch in diameter and long enough to go around the pipe is rolled up and carefully

against the pipe and also against the hub. A good soft lead should be used, so that when it is spread in calking it



The Universal Bath Heater.—Fig. 1.—General View.

pushed down to the bottom of the joint and then calked so that it is both air and water tight. Sometimes a second layer is used, care being taken to get the joint in the second rope of oakum away

will fill the pores and uneven places in the pipe without excessive hammering, which is liable to split the hub. Ordinarily this lead packing will fill a space about $\frac{1}{4}$ inch deep. Some plumbers put

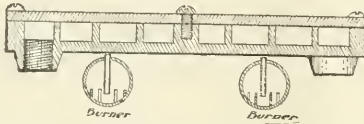


Fig. 2.—Sectional View.

from the joint that was made in the first rope. The oakum should not occupy a space more than $\frac{1}{2}$ inch deep at the bottom of the hub. The joint is then poured full of hot lead so that it will bulge up slightly in cooling. It is then

this lead packing in in two layers, calking each layer carefully after it has been poured.

THE STEEL CLAD BATH COMPANY,
W. C. Trageser, president, 447 West

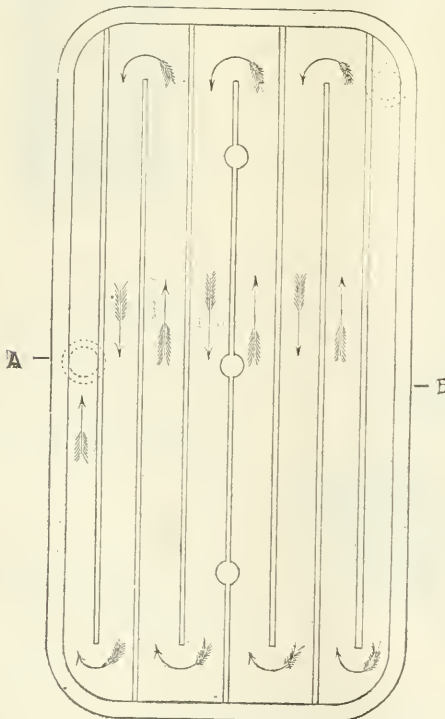


Fig. 3.—Plan View.

calked so as to bring the raised portion of the lead down level with the top of the hub end of the pipe, care being taken to make the lead fit tightly

Twenty-sixth street, New York City, announce that they are now the exclusive owners of the United States Patent 458,995, issued to George Booth for bathtubs and the registered trade-

mark United States 21,806, for the words "Steel Clad," also issued to Mr. Booth. They say that they have been advised that the patent and trade-mark are in every respect original and valid, and that they will deal according to law with all infringers and concerns selling infringing tubs.

The Universal Bath Heater.

The Illinois Safety Heater Company, St. Charles, Ill., are putting on the market an apparatus for heating water for the bathroom. It can be operated by gas from the city supply or by gas made by their gas manufacturing apparatus. Fig. 1 shows a general view of the apparatus, and Fig. 2 shows a sectional view of the waterway and burner. The burner sets directly under the water heater, the products of combustion rising at each end and passing out through the smoke outlet at the top of the heater, shown in Fig. 1. Fig. 3 shows the circuitous course which the water is made to take in passing through the heater, the water entering at one corner and passing between the partitions, as shown, until it reaches the outlet on the opposite side. It is claimed that the water that flows is equal to a $\frac{1}{4}$ inch stream and the temperature to which it is heated depends upon the quantity of gas burnt. It is said, however, that sufficient water for a bath may be heated to the desired temperature in a very few minutes.

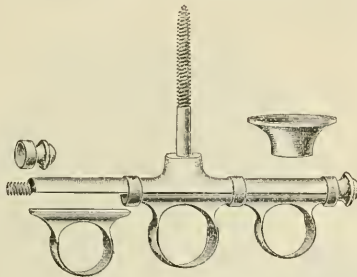
Kitchen Boiler Explosions.

A great deal of attention has been given by the English trade press to the subject of kitchen boiler explosions, and more or less of what has been said has been repeated in the American press, though it is almost entirely inapplicable. From the diagrams used in connection with these articles and the descriptions given it can readily be seen that the method of piping is quite different from that in most general use in this country. The words "kitchen boiler," as used in England, apply to what is known as a water back here, and the explosion of a water back in the United States is generally due to carelessness or ignorance. Such an accident is most frequently heard of in connection with houses that have been closed for a season, and, as a consequence, the water supply has been shut off and the plumbing system drained. Oftentimes a fire is built in the range or cooking apparatus previous to turning on the water, and if when the heating coil or water back has reached a temperature approaching redness the water is turned on, steam will be generated instantly of sufficient power to burst the water back. These accidents generally occur at a season of the year when frost is in no way accountable for them, while the explosions described in England are directly due to some of the pipe becoming frozen, more particularly the pipes leading into the water heating apparatus, which they call the boiler. It would seem from reading the accounts of the explosions there that their kitchens are not kept as warm as the American kitchens, and that the freezing of the pipes to their water heating device is by no means uncommon. With the water at a low temperature and their water heater full, if their pipes become frozen there is no room for the water to expand on heating. The heater will therefore be sorely strained, if not fractured. If fractured, be the leak ever so small, the

water contained will soon be exhausted; then when a new fire is built before the frozen pipes are thawed out the water heater becomes so hot that on the pipes being thawed an inrush of water causes the generation of steam, which wrecks the apparatus, as the leak will not permit the steam to pass off with sufficient rapidity.

Hodgdon's Brass Pipe Hanger

We show in the accompanying illustration a hanger for brass pipe, put on the market by C. W. Hodgdon, 164 High street, Boston, Mass. It is made to be neat, strong, and attractive in appearance and is intended to support brass pipe from the wall or ceiling.

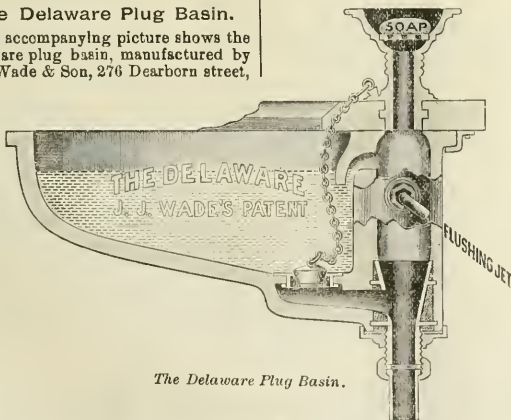


Hodgdon's Brass Pipe Hanger.

The device is complete in itself, requiring no screw or other means of fastening, as the screw shank is long enough to reach either studding or beams. The rings are made of polished brass, of all sizes, so that different sizes of pipe may be supported by one hanger. With the increasing use of exposed work and brass pipe there has arisen a demand for a neat and serviceable hanger, and it was with a view of supplying such a hanger that the present device was brought out.

The Delaware Plug Basin.

The accompanying picture shows the Delaware plug basin, manufactured by J. J. Wade & Son, 276 Dearborn street,



The Delaware Plug Basin.

Chicago, Ill. One of the special features of this basin is the provision for thoroughly flushing the overflow and trap. It differs from the ordinary plug basin by having a secret overflow of glazed earthenware, made as a part of the basin. A part of its fittings is a sanitary soap cup which drains into the overflow, so that the water and waste soap from the cup, instead of accumulating as is ordinarily the case, is dis-

charged to the waste pipe. On removing the strainer in the soap cup a swab may be inserted for cleansing the interior of the overflow. A flushing jet is attached to the overflow by which both the overflow and trap may be flushed at will. The ease with which the basin may be cleaned is a property for which great excellence is claimed by the manufacturers. It is stated that any of the commercial traps on the market may be used in connection with the basin.

Graduated Plumbers.

Graduating exercises of the North End Union Plumbing School were held at the school on Parmenter street,

Boston, Mass., Wednesday night. Work of the students was placed on exhibition previous to the exercises. Addresses were made by David Smith, President of the Master Plumbers' Association; William H. Sayward, Secretary of the National Association of Builders; Rev. John Cuckson, Thomas J. Tute and John Cooper. The speakers encouraged the students and recommended manual training schools as the best method of training young men for mechanical accomplishments. At the

close of the exercises the Committee on Examination reviewed the work of the students and awarded diplomas to Edward H. Marshall of Somerville and Walter B. Chase of Boston. Samuel F. Hubbard, Superintendent of the school, presided. The third term will open on October 1, 1895.

In connection with the use of cellulose in war ships, Alfred J. Ostheimer,

president of the Cellulose Company, Philadelphia, has received a cable dispatch stating that in the battle of Yalu the Japanese battle ship "Matusima" was pierced by a 6-inch shot, but the ship suffered but slight damage, the cellulose in her coffer dams having quickly expanded and closed the breach. This is the first time that cellulose has been tested in actual warfare.

TRAPS AND VENTS.

WM. I. MAUDE has started as a plumber, tinner and copper worker at 204 Pleasant street, Fall River, Mass.

BLANCHARD & BRADEN, Oldtown, Me., successors to Daniel Sawyer, have taken possession of the business and started in at the old stand. They will do plumbing, steam and hot water heating, tin and iron roofing, &c.

PETER HOWARD and THOS O'CONNELL have been registered proprietors, of Howard & O'Connell, plumbers Montreal, Can.

MR. WRIGHT of Bennett & Wright, plumbers, &c., Toronto, is on a week's business trip to the United States in search of the newest things in all lines pertaining to his business.

JOSEPH DESLAURIERS and JOSEPH DEMERS have been registered proprietors of Joseph Deslauriers & Co., plumbers, St. Henri De Montreal, Quebec.

J. W. VILLINGER & BRO., plumbers, will remove from Third and West streets to West Fourth street, near Pine, Williamsport, Pa.

THE WILCOTT-HURLEUT COMPANY, 175 and 177 Lake street, Chicago, are furnishing their customers with handsome cloth covered portfolios in which to preserve the company's catalogues of plumbing specialties. These catalogues are being issued in series. The one just out is a very handsome publication devoted to bathtubs. It is beautifully printed and finely illustrated on heavy paper. Improvements are shown in a number of types of bathtubs. The goods illustrated are light gray enameled iron porcelain lined, patent overflow porcelain lined, shallow porcelain lined, the Puro porcelain lined recessed, the Princess porcelain lined flat rim, the Duchess porcelain lined roll rim, the Aden shallow porcelain lined, the Czarina shallow porcelain lined, the Persian pool bath, set and foot baths, &c.

THE following plumbers have recently started shops in Chicago: F. R. Scholfield, 310 South California avenue; Albert Peterson, Milwaukee avenue and Centre street; Henry & Clark, 5738 Wabash avenue.

A REPRESENTATIVE in the Michigan Legislature thought that the Plumbing bill meant that if a farmer wanted to run a pipe from a windmill to a watering trough he would have to hire a licensed plumber.

WALTER CALHOUN has purchased the interest of the late Edward P. Williams in the plumbing business formerly conducted by Calhoun & Williams, at Amsterdam, N. Y., and will hereafter be the sole owner.

INSTANTANEOUS WATER HEATING COMPANY of Chicago have increased their capital stock to \$60,000.

A. B. WILKINSON, the plumber, is now located in his new shop in the rear of the Knox-All printing office, West Haven, Conn.

F. H. ROATH, who recently opened the store 76 and 78 Water street, Norwich, Conn., as a plumbing establishment, will handle the Hub steam heater.

It is said the plumbers of Detroit, Mich., do not take kindly to the recommendation of the Board of Health for a plumbing inspector, and when the matter comes up in the council it will have considerable opposition.

A. C. HOVEY, who for fifteen years has conducted a stove store in Smyth's Block, Manchester, N.H., has entered into partnership with W. L. Spaulding, formerly with the Pike & Heald Company, and the new firm will continue business at the old stand. Mr. Spaulding is a practical plumber and steam and hot water engineer.

The House of Assembly of New York have passed a bill giving the Department of Public Buildings in New York joint jurisdiction with the Board of Health over plumbers and plumbing.

CHARLES VANDERCOOK has been appointed inspector of plumbing for the city of Cohoes, N. Y., at a salary of \$800 per year.

A. G. MILLER of Lancaster, Ohio, has leased the J. G. Lullier room in the Centennial Block, Marion, Ohio, where he will establish a plumbing shop at the old stand of Cunningham & Stowe.

PUMPHREY & ARMSTRONG have purchased the stock of T. S. Clark, the well-known plumber, of Delaware, Ohio.

THOMAS CONLIN PLUMBING & HEATING COMPANY have been incorporated at Chicago. The incorporators are Thomas Conlin, William B. Elwell and John Moss.

The inmates of the county prison at Kansas City, Mo., are to construct a sewer for the prison.

The front of Ed. Bailey's plumbing shop, at Altoona, Pa., was scorched by fire last week.

JOHN MITCHELL, president of the National Association of Master Plumbers, visited Newark, N. J., this week, conferring with the Master Plumbers' Association in reference to putting the Baltimore resolutions into full operation in that city.

THE ADDRESS of DuBois & Darrow, formerly in the plumbing supply business in New York, is junction of Old River Road and Second River, Newark, N. J., where they are engaged in the manufacture of specialties.

THE H. MUELLER PLUMBING AND HEATING COMPANY, Decatur, Ill., have been awarded the plumbing in the new Millikin block. The contract amounts to about \$13,000.

P. J. CASEY of Newport, N. H., has been at Ludlow, Vt., looking over the field with a view to establishing himself in the plumbing business. He expects to rent the new building which is being erected.

THE PLUMBERS of Hampshire County, Massachusetts, have for some time been trying to bring all of the master plumbers of the towns of Northampton, Easthampton, Florence, Haydenville and Amherst into an association with a uniform list of prices for plumbers' supplies, from which no deviation was to be made in bidding for contracts, and builders of houses have for some time been obliged to pay the prices the plumbers have agreed upon. The asso-

ciation has labored hard to make the organization complete, and all of the master plumbers in this section of Hampshire County are in the combine except one master plumber in Amherst, who refuses to join.

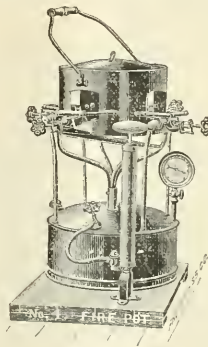
V. E. LOMBARD, the plumber, has bought out E. M. Leland and has established his business at the old stand on Railroad street, Great Barrington, Mass., and is prepared to do all kinds of work in sheet iron and tin, as well as sanitary plumbing.

THE OFFICES of A. D. Burns' plumbing establishment, Bradford, Pa., have been moved into the Burns block.

BENJ. GUINEY of the Detroit Builders' Exchange, Colonel McGurrin of Grand Rapids, Captain John Wheeler of Kalamazoo and others have visited Lansing, Mich., and done a great deal to aid the plumbing bill which is being pushed by Representative John Donovan.

No. 4 Fire Pot.

The Clayton & Lambert Mfg. Company, Ypsilanti, Mich., are putting on the market the No. 4 fire pot with air



No. 4 Fire Pot.

pump and pressure gauge, a general view of which is shown in accompanying illustration. They explain that while their No. 1 fire pot meets all the requirements of general plumbing and tin-smithing, yet there are some lines of work for which more heat and more space for irons and metal are necessary. For this they are making two, three and four burner fire pots. The four burner pot will melt 200 pounds of lead in 20 minutes, and will, it is claimed, heat all the irons that six or eight men can use. It is used in large factories for lining lead tanks and other work requiring a large amount of heat. The Clayton & Lambert Mfg. Company advise us that they are in position to build fire pots suitable for special purposes, if the trade will send them specifications of what they need.

The report of the European agent of the Department of Agriculture at Washington indicates that the recent severe weather has caused great injury to crops in Great Britain and France, and indeed throughout the whole of Europe.

The Inter Ocean Electric Railway has been incorporated in Illinois, with a capital of \$200,000,000, to construct an elevated electric railway from Chicago to New York and finally to the Pacific Ocean.

News and Notes.

The Chicago Subway Arcade & Traction Company have been incorporated at Springfield, Ill., with a capital stock of \$15,000,000, the declared object of the company being to construct subways in Chicago and operate a line of cars with dummy engines.

An International Inventions Exhibition is being organized at Munich, Bavaria, to be held in that city from June 15 to September 15 next. The exhibition will include new inventions of all kinds relating to industry, hygiene, transportation, &c.

According to the *Times-Democrat*, of New Orleans, La., the number of factories of various kinds in that city has increased from 915 in 1880 to 3595 in 1895; while the manufactured product has grown in value from \$19,000,000 in 1880 to over \$70,000,000 in 1895. The number of hands employed has also increased, in the interval, from 8404 to 46,000.

The ironclad cruiser "Imperator Carlo Quinto," the latest addition to the Spanish navy, was launched at Cadiz on March 13. The new vessel is expected to attain a speed of 20 knots. Her armament will comprise two 11 inch guns, ten 5½-inch guns, four 4-inch and four 6 pounder quick firing guns, four machine guns, and six torpedo tubes.

The announcement is made from Pittsburg that efforts have been undertaken to bring about an interstate conference between the local coal operators and miners of Pennsylvania, Ohio, Indiana and Illinois in order to establish uniform rates.

An agreement was signed Saturday by the companies interested in the lake and rail business between the Northwest and the seaboard for a division of traffic among the several interests. The arrangement applies more particularly to package freight, the grain business being already provided for under another agreement. The lake and rail rates will be the same as last season.

The Dutch Parliament has agreed to a vote for the purchase of 52,000 of the new 6.5 mm. Mannlicher rifles where-with to equip the Dutch army. The weapons will have to be obtained from some foreign firm, there being no facilities in the Netherlands for turning out these arms.

An unusually large number of enterprises were started in the State of Pennsylvania during the month of March. According to the first quarterly report of the Secretary of the Commonwealth, 71 charters were issued in the month of March, three being for railroads and the balance for manufacturing concerns, and 103 foreign corporations were accorded permission to operate in the State.

A combination of all the leading plate glass manufacturers of the United States was consummated at Pittsburgh last week, when several important firms were consolidated into the Pittsburgh Plate Glass Company, with a capital of \$10,000,000. The business of all the companies will be transacted in Pittsburgh, where the main offices will be located.

Navigation on Lake Erie opened on April 4, when the steamer "City of Detroit" left her dock at Detroit and made the first trip of the season to Cleveland.

THE RETAIL STORE.

The Magic Dish Drainer.

A very useful novelty for kitchen use is herewith illustrated—namely, the Magic dish drainer, which is manufactured by the Leach Roaster & Baker Company of Paxton, Ill. The article is made of perforated sheet metal and is intended to be placed in the sink. After the dishes are washed they are put in the drainer, hot water is then poured

the can opener. The goods are packed in hinged cover boxes, $\frac{1}{2}$ gross in each box.

The Shirk Refrigerator.

The Shirk Refrigerator Company, Chicago, Ill., have recently added to their line of refrigerators a style which has two doors to the ice chamber, one at the front and the other at the top

Gate City natural stone A, through which the water filters. There is a hole running perpendicularly through the stone, closed at the top but open at the bottom, through which the water is discharged after it is filtered. There is a space of about $\frac{1}{4}$ inch between the outside of the stone and the inside of the glass barrel. In operation the filter is attached to the bib at the opening in the top, the water filling the space be-

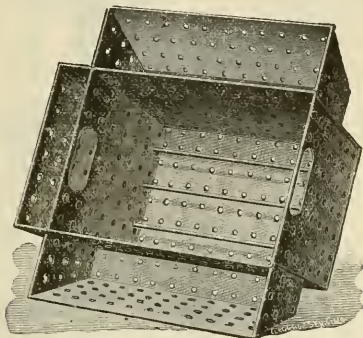


Fig. 1.—The Magic Dish Drainer.

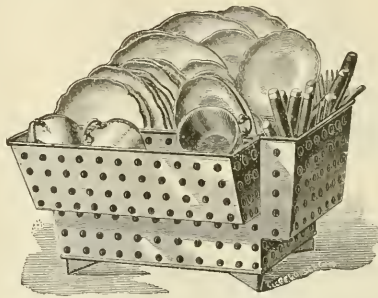


Fig. 2.—Dish Drainer in Use.

over them freely and in a moment's time they can be lifted from the sink ready for use again or to be put away without the trouble of wiping. The compartments save the clashing together of large and small dishes, reducing breakage very considerably. It is also referred to as a convenient receptacle for carrying dishes from the kitchen to the china closet.

Can Opener Carpet Tacks.

Grand Crossing Tack Company, Grand Crossing, Chicago, are introduc-

for the greater convenience of putting in ice, also for breaking the ice for family use. The refrigerator is made in three sizes, Nos. 41, 42 and 43. They are constructed of selected oak, cork filled throughout and are fitted with solid bronze trimmings and have automatic self-tightening locks. The company advise us that they have recently opened a store at 509 Market street, Philadelphia, with J. P. Maher as manager, who was for 16 years super intendent of the Ridgway Refrigerator Company, Philadelphia, and that they will also have a New York office at 330 Warren street.

The Gate City Drip Stone Faucet Filter.

The accompanying cut represents a faucet filter recently added to their line by the Gate City Stone Filter Company, 35 Murray street, New York. The metal portion of the filter is made

tween the stone and glass barrel, filtering through the stone, and is delivered at the outlet D. The impurities from the water are deposited on the surface of the stone, from which they are removed by brushing. A few turns of the thumb screw B permits the base to



The Gate City Drip Stone Faucet Filter.



Can Opener Carpet Tacks.

ing can opener carpet tacks, as shown herewith. It consists of a can opener with a hollow handle containing 200 silver steel carpet tacks. The can opener with tacks is designed to retail for five cents, while the manufacturers state that the can opener is worth the money irrespective of the tacks, and that the tacks are their silver steel goods, worth the money irrespective of

of brass nickel plated. Between the metallic bottom and top pieces of the filter is a glass barrel surrounding the

which the stone is attached to be taken out for that purpose. The manufacturers state that the capacity of the filter is 5 gallons or upward per hour, according to the pressure and the amount of deposit in the water; that the filter can be attached to any faucet, even where there is no thread on it, by means of their improved connection; that the glass case enables the process of filtering to be seen; that the impurities never penetrate, but lie on the sur-

face of the stone; that brushing the surface of the stone presents a fresh filtering surface to the water, and that after years of use the stone will be found internally as pure and white as when originally mined. The size of the filter is $3\frac{1}{2} \times 4$ inches and the size

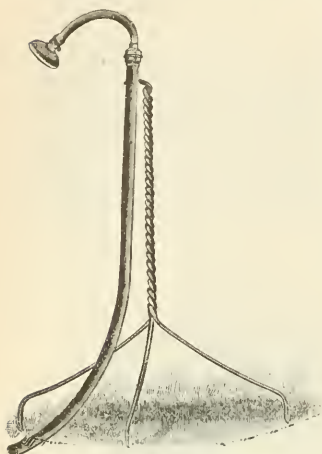


Fig. 1.—The Crazy Water Whip.

of the filtering stone is $2\frac{1}{2} \times 2\frac{1}{2}$ inches. When unfiltered water is desired it is drawn from the faucet C. Turning the milled ring on to the faucet to the left allows the unfiltered water to flow and turning it to the right closes the faucet. The filter is made both with and without the faucet C. New filter blocks, with directions for replacing, can be obtained when necessary.

The Crazy Water Whip.

The lawn sprinkler herewith shown is put on the market by the Crazy Water Whip Company, Anderson, Ind. It is described as being constructed of rubber of special manufacture, of the most durable character, and as finished

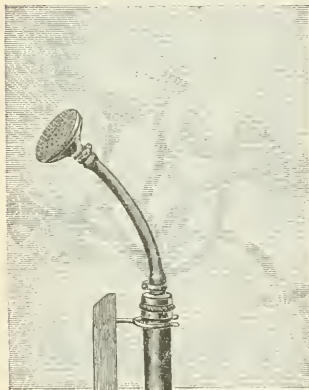


Fig. 2.—Operation of the Crazy Water Whip.

with brass and nickel plated attachments. It is stated that the whip throws the water a radius of 10 feet from the sprinkler, thus describing a circle of 20 feet; that it covers every inch of the space, gently sprinkling the

lawn like rain, and that in operation it writes in every conceivable direction and appears almost animated. In Fig. 1 the whip is shown attached to the hose and placed in the hose clamp on the tripod or stand which accompanies each of the sprinklers. The tripod stands 3 feet from the ground, and is made of $\frac{1}{2}$ -inch iron rods, tastefully painted, so as to present a neat appearance. The feet of the tripod are to be pressed into the lawn. The manufacturers claim that the sprinkler is new, novel, inexpensive and ornamental; that it does not strain the hose; that it is effective and durable; that it requires no repairs, and that it is commended by hose dealers.

Eureka Clothes Horse.

The cuts shown herewith represent a clothes horse being introduced by H. Young & Co., 19 East Sixteenth street,



Fig. 1.—Eureka Clothes Horse.

New York. In Fig. 1 the horse is shown folded up for putting away, and in Fig. 2 as in use. The horse extends from the floor to the ceiling and can



Fig. 2.—Eureka Clothes Horse in Use.

be made to fit any room. It has ten dowels or arms which spread for hanging clothes on. The arms with the clothes can be raised any desired height, thus facilitating the drying process. The manufacturers remark that when the horse is folded it occupies but little space, that it proves a great convenience in wet and damp weather, and that it is suitable for hanging clothes on after they have been ironed.

Zimer Gas Lamp and Stove.

Zimer Patents Company, 71 Shoe lane, London, E. C., England, are offering a combined gas lamp and stove, as shown in the accompanying cut. The device consists of a cast iron stand with wire gauze stretched across the top. A gas stand is provided, as shown by the



Zimer Gas Lamp and Stove.

dotted lines at the base of the illustration, with a gas jet and a tube for attaching the rubber hose accompanying the stove. The inside of the stand, it is explained, forms the mixing chamber for the gas and air. As shown, the stove is designed for boiling water, cooking, frying, heating sad irons, &c. For use as a lamp the gas light stand is removed from below the heater and placed on the top. A strong green cardboard shade, supported by a wire frame, is then mounted on the stand. For use as a sealing wax jet or cigar lighter, a brass tube with a small opening in one end is attached at the other end to the gas light stand by a piece of rubber tubing. In this form it may be used for sealing packages, lighting cigars in cigar stores or restaurants, for singeing poultry and for other purposes where a small flame is desirable. The stove is provided with 6 feet of flexible gas tubing, and the point is made that the device can be moved wherever it is most convenient for use. The metal parts of the stove are finished in bronze, and each stove is packed in a wooden box with hinged cover. The manufacturers advise us that they are now fitting Argand and incandescent burners for lamp use, and that they are also improving the general appearance of the device by giving more symmetry to the outlines wherever possible.

GEORGE H. COLE & Co., 219 River street, Troy, N. Y., have issued a poster designed to be hung up in the store of the dealer. It contains a list, alphabetically arranged, of the names of stoves for which repairs can be furnished from original patterns. The list is a long one, and indicates, in addition to the names of the stoves, whether they are ranges, cooks or hesters. Messrs. Cole & Co. state that they have made arrangements with the different stove manufacturers of Troy by which they can furnish repairs of all stoves on the list at their regular prices. They have also made arrangements with two of the express companies by which repairs can be forwarded over their lines in such a way as to save time and return charges.

Galvanized Pump Curb and Tubing.

The illustrations here given represent galvanized pump curb and tubing, also a rubber bucket, put on the market by O. P. Schriber & Co., Cincinnati, Ohio. The curb, Fig. 1, is made of galvanized sheet steel, and this, with the tubing, Fig. 2, is put on the market to overcome the objection to wood curbs and tubing. The manufacturers state that the curb, in addition to being made of galvanized steel, is painted and varnished to make it durable, and that it

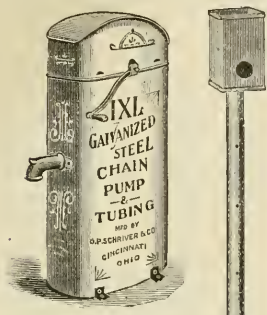


Fig. 1.—Galvanized Sheet Steel Pump Curb.

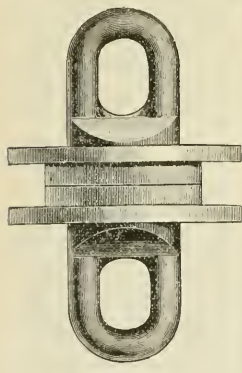


Fig. 3.—I X L Rubber Bucket.



Fig. 2.—Galvanized Steel Tubing.

will not rot, warp or fall to pieces. The tubing, which is made of No. 24 galvanized steel, with a reservoir at the top and a funnel at the bottom, is referred to as not making the water taste as wood tubing does, as not rusting or accumulating filth, and as anti-freezing, as the reservoir piece has a small hole in it to allow the water to run out. It is stated that the tubing may also be used on any make of wood curbs, as the stirrup on all other curbs will fit the square reservoir box on the galvanized tubing. The reservoir tubing is made in lengths of 5, 6, 7, 8, 9 and 10 feet, each piece having a half coupling on it to fit the other half on the funnel tubing, the latter being made in lengths of 6, 8 and 10 feet. Plain tubing is furnished where a greater length than 19 feet is required; this being added between the reservoir and funnel pieces. The advantages of

the pump bucket, Fig. 3, are enumerated by the manufacturers as follows: The bucket cannot be put in wrong; it is made of first quality rubber and is double, having two wearing edges, with a corresponding increase of suction power; it has a water space that allows of a water packing, which is as good as rubber, without increased friction; it is reversible and self-adjusting, as the pliability of the rubber allows it to adjust itself to any sized tubing; a reverse motion of the crank will not injure it, and the rubber cannot be stripped from the link.

Oven Thermometers.

BY I. OPEN.

A great convenience to the cook will be found in a new device that has recently put in an appearance—the oven thermometer. A neat dial in a nickel plated border occupies the center of the oven door and is connected with contracting and expanding parts on the inside which operate the hand on the dial. Whether or not they record temperature correctly they point to the same place when a certain temperature is reached, and if that temperature has proven satisfactory for any article at one time it is best not to put the food in the oven till the hand reaches that point on the dial. If the fire goes down while food is cooking and the oven cools the dial hand records it promptly and is a sufficient notice to fire up. If, on the other hand, the heat increases the dial hand gives prompt notice and the fire can be checked before the food is charred. The oven thermometer has much to recommend it and is being furnished in a number of first class stores this year. Being made of metal, it is not open to the objections made to the glass thermometer which an unsuccessful effort was made to introduce a few years ago. In cost the new thermometers are very reasonable and in adjustment very simple. It is more than probable that the stove dealer can find their sale profitable for use with stoves already in service. Some of the best teachers of cooking schools and noted domestic cooks have found their use highly beneficial, so that their introduction by the dealer in otherwise well equipped kitchens should not be found difficult.

Combined Flour Bin and Sifter.

Cook Flour Bin Company, Homer, Mich., are offering a combined flour bin and sifter, made of seasoned wood, hand carved, and finished in hard oil. At the base of the bin is a receptacle holding about 10 pounds, into which the flour is sifted from above and which is accessible through a trap door in front. Above this receptacle is a wooden roll worked by a small crank at the side of the bin, and so constructed, it is explained, as to form a force feed. The roll is placed so as not to touch the sieve beneath it, to avoid wear on the screen. It is stated that 25 pounds of flour can be run through the sieve in three minutes' time. The roll and hopper are so arranged as to prevent the weight of the flour in the bin resting on the screen. A tin scoop accompanies the bin, holding just a cup of flour, which is kept in the receptacle under the sieve. The bin is designed to hang against the wall directly over or at the side of the table where the work of the kitchen is done. The man-

ufacturers claim that the bin being made of wood will not bruise or jam in handling like tin, that it cannot rust or draw dampness by the collecting of frost, and that it keeps the flour dry, warm, loose and lively. The bin is made in sizes to contain 12, 25, 50 and 100 pounds of flour.

MEMORANDA.

"I MAKE more money out of heating stoves than most hardware merchants do," remarked a South Sixth street second hand dealer, says the *News* of St. Joseph, Mo. "The reason is that I frequently sell the same stove three or four times at a profit. See that base burner sitting over there? I sold that in the fall of 1893 for \$23, bought it back a year ago for \$9, sold it last winter for \$18 and took it in again a few days ago for \$7. It is in pretty good shape yet, and ought to realize me \$10 or \$12 next winter. A great many people sell their heating stoves in the spring because they have no place to store them or because they make up their mind to buy a new one when winter comes again. But when cold weather arrives they come back and buy the same stove again or one just like it. I have one stove here which I have sold five different times and taken back as many times. It cost me \$11 in the start and I have made \$87 out of it already."

V. CLAD & SONS, Philad-elphia, have just issued a 44 page catalogue descriptive of their line of ice cream freezers and machinery, ice cream utensils and supplies. The book is profusely illustrated and is a store of information in regard to the requirements of an ice-cream saloon. A few other goods are also shown, among them steam jacket kettles, fruit presses, milk shakes, water coolers and stands, Clad's coffee urns, portable brick ovens and French ranges.

THE FIRE that swept over Canaseraga, N. Y., on the morning of March 28, destroying property to the value of \$200,000, brought a loss of \$6000 to George A. Hawley, against which he had \$2300 insurance. Mr. Hawley writes us that he lost everything in the shape of catalogues and would be glad to have manufacturers of the goods which he handles send him catalogues, price-lists, &c.

H. SOAMES & SON have just opened a hardware store and tin shop at Lawrenceville, Ill.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich., are supplying dealers with attractive printed matter, and in many ways putting them in a position to increase the sale of Sweepers. The company recommend the plan of dealers putting out a dozen Sweepers at a time on trial, with responsible customers, and for this purpose typewritten letters to ladies are provided. The plan has proved remarkably successful where tried, as shown by letters from dealers. With each dozen Sweeper, in addition to a large quantity of pamphlets and circulars, two attractive window cards are sent and a view of the company's factory.

MAINE MFG. COMPANY, Nashua, N. H., New York and Boston, issue a catalogue and price-list illustrating Maine and White Mountain Refrigerators and Ice Chests, Hardwood Folding Seetees, Folding Chairs, Window Frames, Window Screens, Folding Lsp Boards, Hardwood Flower Stands, Children's Blackboards and Children's Rocking Chairs.

STOVE TRADE NOTES.

The Local Stove Trade.

The march of improvement in the stove business goes slowly but steadily on. The local stove trade, though many dealers are still heard to complain as they have for two years past, and though salesmen hear many tales of woe on their rounds, continues on a gradual up grade, as reported in our last revision of the local trade a few weeks since. Salesmen occasionally garner "goose eggs" instead of orders, but the uniform dullness, unanimous cry of hard times and universal distress have moderated. The trepidation experienced by a salesman a year or so ago as he neared the store kept by some dealer whose financial responsibility was not first class has passed away, and he does not dwell in fear of finding closed doors or the business in the hands of strangers. Journeymen are not found idling about plumbing, tin or roofing shops awaiting assignments to work as formerly, and in the small stores in the poorer neighborhoods the care of the store is in the hands again of the dealer's wife or children while he is out at work. The musical sound of the hammer and the rattle of tin and iron are heard in the back shops where silence reigned so long before.

All this is noticeable to the drummer who is familiar with the normal business or state of activity in the different stores, and acquainted with the conditions prevalent last year and '93, but it might be hard for a new salesman to believe that any improvement had taken place, for business is still far from brisk. Collections are still too slow to anticipate anything but a crawling improvement in business, for consumers in debt will be slow to increase their indebtedness, dealers slow to give the credit and manufacturers slow to urge goods on the dealer. Hence, while the struggle is fierce and constant to effect sales and move goods, there is also a tendency—yes, a necessity—to throw out buffers to retard a great deal a probable business, to avoid future difficulty in collecting.

The business of March was an improvement over March, 1894, though bearing a less percentage of gain than January and February, but winter lingered in the lap of spring and navigation was late in opening and buildings delayed owing to cold weather. There is a slightly larger spring demand for small coal cooking constructions and laundry apparatus than a year ago. Five and six hole portable ranges have taken a fresh start in the face of the

many appliances and constructions for the use of oil, gas and gasoline calculated to reduce the demand for small coal stoves at this season and despite the ridiculous competition on them.

It is a question if the strife that has been going on with such goods has not caused the dealers to turn their attention and endeavors back again to coal stoves, on which they can now make more money. When hot plates are cut so in price that through accident the breaking of one stove eliminates the profit on a dozen either to manufacturer or dealer, interest wanes and the time for a sober understanding for mutual advantage is at hand. The effort of local manufacturers to sustain prices is made difficult by endeavors of remote foundries to procure new markets for their stoves, and many "samples" are dumped hereabouts at cut prices.

Ohio Stove Trade.

Confidence, the quickening influence of all industries, is evidently growing in this section and among the stove foundries it is gratifying to note its influence. With the passage of each month, it is evident that there is a larger proportion of manufacturers who think and write more encouragingly concerning the outlook and respecting the business in hand. Manufacturers seem to feel the relief from the depressing influences of the panic more and more, but at the same time it is evident that they retain a conservative sentiment and are therefore not disposed to discount any developments of the future. Taking into consideration the few unfavorable returns made, it is still evident that the volume of current business is increasing, being very much larger than a year ago, and in not a few instances shows an improvement over the transactions of 1892. But while the number of orders and the aggregate amounts make favorable comparisons, the net returns upon capital invested are not specially gratifying; still the improvement has been so great that it places a check upon those who are still disposed to grumble.

Cincinnati iron factors state that stove foundries are not conspicuous as large purchasers of iron but that the contracts placed indicate they are melting heavier than might be expected, considering the conditions, at this season. The hardening tendency of the market for pig metal which will naturally follow the advance in coke and Bessemer iron, and the liberal pur-

chases of foundry grades by large buyers, may have stimulated smaller buyers, urging them to depart more from the policy of hand-to-mouth purchases, and thus the buying may be the covering of probable future contingencies rather than indicating present activity.

It is gratifying to note that dealers are less disposed to throw all responsibility upon manufacturers, being willing to assume a greater proportion of risk in carrying goods than heretofore, which is a sign of confidence not lost upon foundries and may react with benefit. The more progressive manufacturers seem to feel more disposed to make changes in patterns which have before been contemplated, but from which founders have shrunk because of the expense and the seeming little appreciation of buyers. But as the signs point to a fuller and wider employment of the people, the views of manufacturers become less pessimistic; still there is not disposition to sacrifice what little has been gained and changes are made with caution.

The William Miller Range & Furnace Company

of Cincinnati, Ohio, favor us with a copy of their 1895 catalogue of Miller-Monitor steel plate ranges and hotel kitchen implements. The volume is of liberal proportions, measuring 11½ x 14 inches in size, consists of 77 pages of letterpress profusely illustrated, and is bound in board covers with side title printed in old gold and green upon a dark ground. The wrought steel ranges illustrated and described cover an extensive assortment, being adapted for private families, hotels, restaurants, boarding houses, public institutions, steamboats, dining cars, railroad camps and army posts. The pages of the catalogue also give attention to steam tables, carving tables, broilers, portable ovens, laundry stoves, water heaters, steam plate warmers, chop house broilers, waffle stoves, tea and coffee urns, steam jacketed kettles, &c. Directions are given for ordering ranges and repairs, a descriptive repair sheet being presented among the closing pages of the catalogue. The company have made a number of important additions to their line, among them being the Miller Monitor wrought steel family range, embodying the latest features; the Vigilant, wrought steel range, adapted for using soft coal, hard coal, crushed coke, wood or natural gas; the Puritan, made with single oven and adapted for using soft coal, coke or wood; the Miller-Monitor wrought steel French range, especially adapted for restaurants or small hotels, and provided with the company's non-warping indestructible oven bottom, and the Miller Monitor wrought steel French range for hotels, restaurants and public institutions. This consists of two

sections, has two fires and two ovens, and is intended for burning soft coal, hard coal or coke. The company have also added to their assortment a combination carving and serving table with galvanized plate warmer, although it can be supplied without plate warmer if desired; Miller's coffee, tea, chocolate or milk urn, lined with white enamel urn cylinder, and having a capacity ranging from 3 to 15 gallons; Miller's improved battery of nickel plated coffee and tea urns with elevated hot water urn, which is referred to as "the hand-somest, most complete and only perfect battery of urns in the market;" a galvanized plate warmer with stove attached, the heat being furnished from coils of pipe connected to the water back in the stove; a line of seamless steam jacket kettles constructed of cast iron; seamless cast iron vegetable boiler and steamer; copper steam jacket kettle, and a new table for the use of cooks. The catalogue is arranged with a great deal of care, and the illustrations are accompanied with sufficient descriptive text to enable the dealer to readily comprehend the important features claimed for the goods referred to.

ODD PLATES.

PRESS DISPATCHES from Dowagiac, Mich., under date of March 31, are to the effect that one of the warehouses on the Round Oak Stove Works at that place was destroyed by fire, entailing a loss of about \$15,000. The warehouse contained stove trimmings.

THE ANNUAL MEETING of the S. M. Howes Company, Boston, Mass., was held at their office Saturday, April 6, and the following officers were elected: J. E. Frenning, president; F. V. Streeter, vice president, and G. S. Hedge, treasurer.

THE GREENLEE BROTHERS have sold their interest in the Collins & Burgie Company, stove manufacturers, and the control of the company is now vested in citizens of Marengo, Ill., at which place the foundry is located. Although the Greenlee Brothers are no longer members of the company, a Chicago salesroom and sample room will continue to be maintained at their place of business, 227 West Twelfth street. The new officers of the company are as follows, all at Marengo: R. M. Patrick, president and treasurer; S. K. Bartholomew, vice-president; J. W. Osborn, secretary; Albert Moffat, general manager.

CHARLES C. RUSHMORE, the popular bookkeeper at the Clinton foundry of the Fuller & Warren Company, Troy, N. Y., has resigned his position and will visit Colorado for his health.

GRANGE SARD, vice-president of Rathbone, Sard & Co., Albany, N. Y., has returned from an enjoyable trip across the water.

FOR SOMETIME necessary repairs have interrupted the work at the foundry of the Littlefield Stove Company, Albany, N. Y., but the plant has again resumed operations with a bright prospect for a good season.

THE destruction by fire of the buildings of the Chelsea Stove Company, owned and operated by F. P. Glazier & Co., Chelsea, Mich., throws out of employment about 50 hands and entails a loss of about \$50,000, partially covered by insurance. We understand the intention of Mr. Glazier is to rebuild the plant this spring.

THE BUILDING formerly used as an annex foundry by Rathbone, Sard & Co., Albany, N. Y., has been converted into a mill, where a newly organized company will manufacture felt for use by paper manufacturers.

THE WHITING CUPOLA is described in a catalogue issued by the Whiting Foundry Equipment Company of 225 Dearborn street, Chicago, Ill. This cupola was originally designed as a fuel saver, and it is stated that experience has proven it to be this and much more. It gives lining, repairs and time and gives improved quality of castings. The great satisfaction given by this cupola is largely due to the patented arrangement and construction of the tuyere system, which is so designed as to distribute the blast more efficiently, carrying it to those portions of the cupola where it will do the most good, under a reduced pressure and through an increased area. There are two rows of tuyeres. The lower ones are arranged to form an annular air inlet, distributing the blast continuously around the entire circumference of the cupola. This system of tuyeres is also arranged to be adjusted vertically. This provides for adjustment to the class of work, kind of fuel and changes in the inside diameter of the cupola. These tuyeres are flaring in shape and admit the blast through a small area which is expanded into a large horizontal opening on the inside of the cupola, thus permitting the air to reach the fuel through an area nearly double that through which it enters the tuyeres—admitting the same volume of blast but softening its force. There is an upper row of tuyeres of similar construction to supply sufficient air to utilize to the fullest extent the escaping carbon gas. These tuyeres are of great service in melting and in large heats; for small heats they may be closed by means of the improved tuyere dampers. The catalogue gives a list of the more prominent uses of this cupola and makes extracts from letters received which indorse it in the highest terms.

"GAS COOKING RANGES, GAS GRATES AND HEATING STOVES" are the subjects considered in an exceedingly attractive catalogue which reaches us from F. & L. Kahn & Brothers, Hamilton, Ohio. The 68 pages of which the volume is composed carry illustrations of numerous lines of handsomely decorated goods, while the covers, printed in colors, show a bird's-eye view of the company's plant together with a brief description of it. The gas ranges are made under the generic name Estate, and embrace a varied series adapted to meet the requirements of small and large establishments. The Waldorf broiler and roaster is intended for using any kind of gas and possesses the very latest features of construction. The I X L Family Peerless is a very durable and compact construction designed to do all kinds of cooking, broiling, roasting and baking with an economical consumption of gas. The roaster and broiler are situated below the top and are of sufficient capacity to meet ordinary requirements. The oven has a drop door, which when opened forms a shelf, while vessels intended to be kept warm may be placed on the extreme top of the oven. The broiler burner measures 7 inches in diameter and the cooking burners 4½ inches in diameter. The Bijou Junior is a novelty in the way of hot plates, having a large flush top, portable cover grates and ample space for an oven. The Keystone and Sweepstake are neat hot plates made with one, two and three burners.

A variety of open front gas heaters are shown in the catalogue, being offered under such names as the Victor, Triumph, Champion, Floral Estate and Charming. An interesting line of gas radiators is illustrated and described, together with several varieties of sheet iron cylinder stoves for gas; the Ideal Estate Franklin and the Mozart Grand square parlor stove, the last two being intended for burning natural gas.

THE WALKER & PRATT MFG. COMPANY of Boston, Mass., have issued an eight-page pamphlet of pocket size containing copies of a few of the letters which they have received from customers relative to their new Culinet range. These letters are from various sections of New England and speak in very flattering terms of the satisfaction which the stove has given.

THE J. F. PEASE FURNACE COMPANY of Syracuse, N. Y., are distributing their annual price list for 1895, which consists of a 28-page pamphlet. The price-list is intended to take the place of all lists issued previously. None of the old heater or furnace lists have been changed except those of Tropic Furnace No. 310, but some of the list prices of registers, iron pipe, &c., included in the price-list for 1894 have since been changed. The company have also issued a special circular calling attention to their new goods and improvements for this season. The circular relates to the 1895 pattern of the Economy warm air furnace adapted for burning hard or soft coal. It is stated that the McClave T grate, the hollow bar revolving grate or the anticlinker grate can be used in all sizes of this furnace, as may be desired. The heater is designed especially for use in low cellars, and embodies principles of construction and operation similar to those of the regular pattern furnace. The air blast apparatus employed in connection with the heater is illustrated and described, while a table gives the weights, measurements, capacities, &c., of the various sizes.

THE CRAIG REYNOLDS FOUNDRY COMPANY of Dayton, Ohio, have recently established an agency for the sale of their Triumph heaters with the Lithgow Mfg. Company of Louisville, Ky., who will supply the trade in the South, and with the Blackmore Heating Supply Company of 101 Beekman street, New York City, who will handle the goods of the company in Eastern New York, New Jersey and New England. Other agencies of the Craig Reynolds Foundry Company are controlled by George D. Hoffman of 82 Lake street, Chicago, and the Pittsburgh Heating Supply Company, 100 Wood street, Pittsburgh, Pa. Arrangements are also under way for the establishment of agencies at Philadelphia, Washington and Dallas, Texas. Traveling salesmen report the outlook for trade better than for the corresponding period in any previous year, and the factory of the Craig Reynolds Company is being run almost to its full capacity, while the daily shipments of the company are as large as those made last fall.

THE S. OBERMAYER COMPANY of Cincinnati and Chicago have just received a cargo of Esst India plumbago direct from Colombo, Ceylon, which is probably the largest shipment of fine, high grade silver lead, or graphite, ever imported. It required 50 cars to carry it from the port of entry to its destination. This plumbago will be used in the manufacture of their standard grades of foundry facings. Business is very fair,

being greatly improved over what it has been.

W. B. WILKINSON, 210 Water street, New York, is showing a new range specially adapted for builders' use. It is made with both a single and double oven under the name Welcome. The double oven range is provided with four cooking holes over the fire, and all the ranges are provided with a warming closet. One of the features which will specially recommend it is the grate arrangement. By simply releasing a small button, the form in which the triplex grate bars rest may be withdrawn from the range. A sifter grate is arranged for efficient service, and can be entirely lifted out of the range when desired. The range is attractive in design and ornamented with nickel plate.

W. H. LANDERS of the Syracuse Stove Works, Syracuse, N. Y., made some calls among the trade in New York City this week. He was accompanied by John Kernan of the Kernan Furnace Company.

WE HAVE RECEIVED from Isaac A. Sheppard & Co., Philadelphia, a perpetual calendar, which is adapted for use until the year 2002. It is furnished in a morocco leather case, with the name of the house in gilt at the top, and in gilt letters around the edges is "Excelsior Ranges, Fidelity Ranges and Paragon Furnaces." In red figures above the figures giving the day of the month the day of the year is given, from which we learn that the year was specially arranged for the benefit of the stove dealers, as the last day of June, when the year is supposed to be half gone, occurs on the 181st day in the year in all years but leap year, when it is the 182d. Consequently the half year which belongs to the stove trade in all cases contains 184 days. The calendar is arranged with a stand so that it may be set up on the desk for use. Under the stand directions for its use are given, by which the day of the week on which any particular date falls between 1753 and 2002 can be readily found.

S. FAITH & Co., 229 Market street, Philadelphia, are making a display of the Peerless gas stoves and ranges. They are also showing the Reliable line of gasoline goods, and to complete their summer line they have the Glacier refrigerators. Wm. G. Semple is one of their representatives, well known to the trade through his frequent visits.

SPICER STOVE COMPANY, Providence, R. I., are offering the Model line of ranges this season with some changes designed to add to their efficiency and beauty.

J. P. LINDEMAN & SONS of Milwaukee, Wis., have issued a folder suggesting to dealers that they buy their portable ovens direct and thus effect a saving in freight, money and space. The ovens referred to are so constructed that they may be folded or "knocked down" and packed six in a crate. The ovens are made in various sizes and the firm state that they nest solid so that there is no damage in shipment. They are referred to as having full flue construction, invisible hinges making the bodies and linings one solid section, automatic top, and that they may be instantly set up for use.

W. K. WEST, assistant treasurer of the J. F. Pease Furnace Company, Syracuse, N. Y., has just completed arrangements with W. A. Eckerman of 1026 Lorain street, Cleveland, Ohio,

to handle the company's entire line of heating apparatus in Cleveland and vicinity. Mr. Eckerman is an energetic and successful business man in the stove and hardware trade and now intends to make heating apparatus one of the prominent features of his business. He has recently purchased and placed on his floor nine sample heaters and has also given an order for a carload of heaters for stock. The company state that the business outlook for this year is better than at the same time a year ago, a noticeable feature being the increase in volume since the fall elections, this expansion being stated as something like 30 per cent. The company also report that their sales for March of this year were nearly double those for the corresponding month of 1894.

GIBLIN & Co. of Utica, N. Y., have issued a catalogue of their furnaces and combination heaters which are manufactured in a number of varieties. Illustrated descriptions are given of the Standard, Rival, Standard Steel, Standard Junior improved for 1895, the Standard Smokeless and the Standard Tubular furnaces. There is also shown the Standard hot water combination heater and the Standard steam combination heater, together with a description of the reverse motion grate and the new style of radiator used on the company's Rival furnaces. Several pages at the close of the catalogue are devoted to remarks on fuel, illustrations of grate bars, hints to furnace buyers, together with a list of questions to be answered when information is desired as to the size of furnace needed to heat any particular building. The company have also issued a 20 page pamphlet relating to their furnaces and intended for the exclusive use of dealers.

J. REYNOLDS & SON, manufacturers of furnaces and patent grates, have sold their property at the corner of Filbert and Thirteenth street, Philadelphia, Pa., where they have conducted business for 46 years. The price is said to be in the neighborhood of \$100,000. The firm are removing to a new location at Seventeenth and Filbert streets, four blocks west of their old location, where they expect to do a larger business than heretofore and to increase their line. The firm appear to be keeping fully up to the times in thus moving a little further "West."

THE STANDARD RANGE & STOVE COMPANY, recently organized at Terre Haute, Ind., have issued a little pamphlet calling attention to the Standard range which they are offering the trade. Among the features embodied in its construction are what is termed the indestructible water fire pot, which can be flushed and cleaned from all sediment and also emptied to prevent freezing; a self basting ventilated oven; draw out fire grate; patent oven door opener; self basting roaster and draw out oven. The water fire pot is oval in shape and is so placed as to allow the water to circulate completely around the fire, thus preventing its burning out. The grate is of the duplex type, and can be removed without disconnecting the water fire pot. The range is also provided with a gas attachment so that a coal fire may be dispensed with in summer.

THE J. F. PEASE FURNACE COMPANY, Syracuse, N. Y., are receiving this spring a number of inquiries from abroad due, they believe, to their display at the World's Columbian Exposition. The company have received inquiries from as far East as India, and in

the mail last week was an order from a prominent concern in Lsken, Belgium.

LAST YEAR White, Warner & Co., of Taunton, Mass., built an addition to the rear of their foundry, but owing to the business depression it has not heretofore been used. The company are now about to put it in operation, which will increase the capacity about one third.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until May 7, for the steam heating and ventilating apparatus for the United States Custom House and Post Office Building, at Newark, N. J., in accordance with drawings and specifications, which may be obtained from the Supervising Architect, Washington, or from the superintendent at Newark.

HENRY BREYER, 1725 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the flat building of Herman Katz, Hammond avenue and Roscoe street.

McKEOUGH Bros., Utica, N. Y., have been awarded the contract for connecting the engine, boilers, pumps, tanks, &c., at the new Oneida County Home at Rome.

THE City Property Committee of Holyoke, Mass., has been instructed to advertise for bids for repairing the ventilating machinery of the Nonotuck and Hamilton street school buildings.

T. J. LEONARD, Marlboro, Mass., is putting plumbing work into Thos. P. Hurley's three new houses.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until May 3, for removing the old steam heating apparatus and putting in a new low pressure system in the United States Custom House and Post Office Building, at New Haven, Conn., in accordance with the drawings and specifications, which can be had from the Supervising Architect, at Washington, or from the custodian at New Haven.

THE COUNTY COMMISSIONER, at a meeting at Warsaw, Ind., awarded the contract for plumbing the new County Infirmary to J. D. Madden of Fort Wayne for \$2142, and the contract for heating to J. D. Kutz of Warsaw for \$1994.

PAUL DEWEES has established a successful business in plumbing, hot water and steam heating, at Huntingdon, Pa., and has already nine hot water jobs on hand, as well as the plumbing for the Juniata College of that place. Mr. Dewees advises us that he will be glad to receive catalogues from manufacturers and dealers in goods in his line.

BUILDING INSPECTOR OSTER of Baltimore has reported to Mayor Latrobe the result of an inspection of the old United States Court House, preparatory to its being taken possession of by the city. The inspector found the heating apparatus in such a condition as to render a new system necessary.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until April 20 for the work, including plumbing for the United States Court House and Post

Office Building at Martinsburg, W. Va. Drawings and specifications may be had from the Supervising Architect, Washington, or from the Superintendent at Martinsburg, W. Va.

LAWRENCE SULLIVAN & Co., Taunton, Mass., have the contract for plumbing the new house of George F. Seibel on Broadway.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until April 30 for work including the plumbing of the United States Post Office Building at Columbus, Ga., according to drawings and specifications which may be obtained from the Supervising Architect, Washington, or from the Superintendent at Columbus, Ga.

THE ALBERNE STONE COMPANY, 217 Lake street, Chicago, are to furnish 36 laundry tubs for the Dubuque apartment building, Rush and Indiana streets.

F. O. SINGER & Co., Baltimore, Md., have closed a contract for the entire plumbing work for 22 houses to be erected in that city. Each house will be fitted up with two bathrooms, and the contract amounts to about \$14,000. This firm have just completed an addition to their plant, 40 x 180 feet in size and three stories high.

GOULD & NOWLEN, Bath, N. Y., have the plumbing contract for the new depot at Hammondsport, Taylor's Hotel, at Gibson's Landing, and the Washburn Hotel, at Keuka.

THE SANITARY ARRANGEMENTS of the Hanover House, Manchester, N. H., are to be thoroughly overhauled, and this summer steam heating apparatus is to be introduced.

THE PLUMBING CONTRACT for the Locust Street School Building, Dover, N. H., was awarded to John Baty.

THE CONTRACT for furnishing a heating plant to the new Court House, Toledo, Ohio, goes to the Shaw, Kendall Company for \$21,974. The Powers system of heat regulators was adopted.

THE ARNOLD COMPANY, New Haven, Conn., have taken the contract for the plumbing of the four houses now being built on John street by Clark & Thompson; the plumbing and furnace heating of Mrs. G. Turner's house on Winthrop avenue; the Perfect hot water heating in F. Kirchoff's house on Maple street and I. L. Stille's house in North Haven; also the plumbing of C. P. Thompson's new store on Orange street, and the heating, plumbing and tinning in G. P. Butler's new house. They will do the plumbing in houses for F. S. Porter, where they will put in seven lavatories, Peck fixtures being used, with enameled bathtubs, nickel fixtures and all the modern features of first-class plumbing.

THE SANITARY PLUMBING COMPANY, Norwich, Conn., have just completed a standing lock seam tin roof on the residence of E. Clain, and also have the contract for the plumbing and lighting of the same house.

J. J. TOOMEY has let the contract for the plumbing of the Magurill Block to Tompkins & Murphy, Norwich, Conn.

MRS. JANE K. MATTHEWS, New Haven, Conn., is to erect a \$50,000 residence which will have three bathrooms and a fine system of plumbing. It will be heated by indirect steam or hot water.

FRARY & Co., Dover, N. H., have the contract for the heating plant in the Hale School and will use a Smith & Anthony Company apparatus.

THE TOWN of Hinsdale, Mass., has voted for placing 100 hydrants about the town.

THE BOARD of PUBLIC WORKS of Louisville, Ky., are advertising for bids for renovating the plumbing of the City Hall. An appropriation was made for this purpose some time ago. It is estimated that the repairs will cost \$8500.

MCCAULEY Bros., St. Louis, have secured the contract for the heating and ventilating apparatus of the Ashland School for \$2732 and of the Washington School for \$1871.

THE G. S. BLODGETT COMPANY, Burlington, Vt., have secured the contract for the heating and plumbing of the new United States Hospital, located at the barracks at Plattsburg. The total contract will amount to nearly \$10,000.

CROSSMAN & POLMATTER, Florence, Mass., are to do the plumbing and steam heating for the new Boyd House at Haydenville.

JAMES H. FERGUSON & Co., Millbury, Mass., were awarded the contract to do the plumbing in the 11 tenements of the six new houses of the Millbury Land Company on the Walling land. There will be required $3\frac{1}{2}$ tons of lead pipe, 425 feet of soil pipes and 11 each copper pressure boilers, bathtubs, set bowls and slabs and water closets.

CONTRACTS for heating the Maxfield and Hawthorne schools at St. Paul, Minn., have been awarded, respectively, to the Dwyer Plumbing & Heating Company for \$759 and to Geo. A. Kees for \$745.

DORE & SON, 1042 West Van Buren street, Chicago, have the contract for the plumbing and drainage in the flat building of A. G. Heutz, 33 Balter street.

RICHARD TAIT, 605 Sixty-ninth street, Chicago, is to do the plumbing and drainage in the flat building of G. L. Davis, 6720 Wright street.

JOHN H. SULLIVAN, 328 Division street, Chicago, has the contract for the plumbing and drainage in the flat building of J. T. Marks, 9 Cedar street.

KEEFE & WARNOCK, 1105 Lincoln avenue, Chicago, are to do the plumbing and drainage in the five flat buildings of Camp & White, St. Elmo street, Lake View.

THE JOHN F. ALLES PLUMBING COMPANY, 233 and 235 Lincoln avenue, Chicago, have the contract for the plumbing and drainage in the flat building of George F. Smith, 260 Seminary avenue.

FRANK MEEK, 486 West Eighteenth street, Chicago, is to do the plumbing and drainage in the flat building of R. Skata, 394 Seventeenth street.

WILLIAM MAROFESKE, 376 West North avenue, Chicago, has the contract for the plumbing in the flat building of J. Kuschnick, on Barclay street.

WILLIAM READ, 345 Forty-third street, Chicago, is to do the plumbing and drainage in the flat building of Isaiah Breat, 4833 South Ashland avenue.

ANDREW W. AITKEN, 2314 West Harrison street, Chicago, has the contract for the plumbing and drainage in the residence of C. Kayrn, 2549 Miller street.

WILLIAM BLETSCH, 1216 Belmont avenue, Chicago, is to do the plumbing and drainage in the flat building of H. G. Sindera, 947 Seminary avenue.

THE PLANS for the heating and ventilation of the new training school dormitory at Springfield, Mass., have been received from the Buffalo Forge Company of Buffalo, N. Y., and bids will be advertised for.

SEALED PROPOSALS will be received by the Committee on Heating of the Board of Education of the city of Newark, N. J., until April 17, at a meeting to be held in the City Hall for: 1. New boiler for the Chestnut street school house. 2. For repairing and moving boiler now in Chestnut street school house to the Commerce street school house. 3. For placing boiler in Elizabeth avenue school house. 4. For building a brick chimney and setting boiler in the Chestnut street school house.

JAMES RUSSELL, Pottsville, Pa., has been awarded the contract for doing the plumbing in the Y. M. C. A. gymnasium rooms.

THE MATTHEWS & WILLARD MFG COMPANY, Waterbury, Conn., and 40 Murray street, New York, are offering a very attractive new line of Aluminum Chafing Dishes in two sizes and nine or ten patterns. The Chafing Dish, cover and water pan underneath are warranted strictly pure aluminum and superior for cooking delicate materials. The standard, alcohol Lamp and cover are of burnished copper, except a few patterns which are made with standards of aluminum. This company also make a handsome line of parlor, boudoir and banquet Lamps in the various finishes, together with onyx and gold Tables, Cabinets and other art goods of analogous character.

On March 28 27 cars laden with cotton goods were dispatched from Biddeford, Maine, via the Canadian Pacific Railroad to China. This shipment is regarded as important as showing that the trade with China in this line of American products is increasing. The competition between American cotton goods and those of England, France and Germany in the markets of the Orient has hitherto been very keen; and the growing preference manifested in China and other parts of the East for the manufactures of this country is very gratifying. Consular reports indicate the fact that American goods are gradually acquiring the supremacy in the Eastern markets owing to their intrinsic merit.

The Belgian Government has informed the State Department at Washington that the discriminating duties against American food products, recently imposed, has been repealed by a royal decree.

The failure of the Florida orange crop has entailed the suspension of the Philadelphia Steamship Company, who have announced the discontinuance of their service from Philadelphia to Charleston, S. C., and Jacksonville, Fla.

TRADE REPORT.

The Iron Market.

The Ore buying movement has practically ended, nearly all the leading interests west of the Alleghany Mountains having covered their supplies of Ores from the older ranges, while quite a good deal of Mesabi Bessemer has also been placed.

The question of cost of raw materials is settled for the present. Coke contracts are being entered to a moderate extent up to July, beyond which prices are not being made. It is intimated that after that a further twist is to be given.

One uncomfortable feature, so far as the demand is concerned, is the discouraging state of affairs in the Wire trade. Earlier in the year jobbers bought quite heavily, but the consumers do not seem to be taking hold vigorously.

In Bars in the West the conference among the makers has led to a decidedly firmer feeling and an actual modest advance in prices. In Sheets and Galvanized Iron the demand is satisfactory and prices are steady.

The movement in Foundry Pig Iron throughout the country has been moderate during the past week, but a more hopeful feeling prevails.

Merchants and manufacturers are getting a good many inquiries for export, and are doing a good deal of missionary work, with, as yet, very modest results so far as tonnage is concerned.

An incident occurred this week which shows that we are beginning to step on the heels of even the Germans, who have been the most aggressive sellers in recent years. An order came into this market for 1000 tons of Barrel Hoops. An American mill bid as low as any German works and would have obtained the order if there were not a duty of about \$7 per ton on Hoops in Germany. In other words, with equal rates of freight and short credits we can meet them successfully in neutral markets.

In the New York market low offerings continue to be made both by Northern and Southern furnaces to capture what moderate volume of trade is going in this district. There has been some renewed interest in warrants lately, about 2000 tons having been sold on the basis of \$6.40 for No. 2 Soft and \$6.65 for No. 1 Soft, cash, Birmingham. We quote \$12 @ \$12.50 for No. 1; \$10.75 @ \$11.25 for No. 2, and \$10.25 @ \$10.50 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.25 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

In the Philadelphia market Neutral Irons are in good demand, and are promptly taken at last week's prices. Sellers see nothing to warrant them in asking more money, as there is plenty of Iron for sale and in the majority of cases holders are glad to accept quoted rates for prompt shipments. There is more doing than at any time for months

past, and to that extent things are better, but the ample supply explains the torpidity of prices. Prices are about as follows for Philadelphia delivery, and 20¢ @ 25¢ less for points within a radius of 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 1 Plain.....	10.75 to 11.00
No. 2 Plain.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

Local manufacturers of Coke Pig Iron in the Chicago district have advanced their prices on every grade on account of higher cost of Coke and Iron Ore. The week was one of quite heavy transactions and sales were made at the advanced figures. Manufacturers talk very confidently of their ability to sustain the new rates and even predict a higher price in the near future. Large inquiries are in the market, and if all the business now in sight should materialize the buying movement will be the largest for many months. Prices on Southern Iron have not been advanced to correspond with the higher prices named on Northern Iron, but a decidedly firmer feeling is manifested, and it will not be surprising if buyers will shortly be obliged to pay more money for Southern Iron also. Consumers are now taking Iron much more freely on old contracts and in many instances are exceeding their expected requirements. Quotations are as follows for cash:

Lake Superior Charcoal.....	\$12.75 to \$13.00
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	13.00 to 13.50
Southern Silvery, No. 1.....	11.75 to 12.00
Southern Silvery, No. 2.....	11.50 to 11.75
Southern Coke, No. 2.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1, Soft.....	10.00 to 10.25
Southern, No. 2, Soft.....	9.75 to 10.00
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.00 to 15.25
Other Ohio Silvery.....	14.25 to 14.50

Very little is doing in Foundry Iron in the Pittsburgh district and prices are unchanged, quotations being as follows for cash:

No. 1 Foundry.....	\$10.25 to \$10.50
No. 2 Foundry.....	9.75 to 10.00

Reports from Cincinnati indicate more activity among consumers of Pig Iron and a more confident feeling among furnaces in that section. There has been an absence of large sales, but yet the aggregate tonnage has been well up to that of the previous week, indicating a wider and freer distribution of Iron. Southern furnaces are sold ahead to a considerable extent and feel more independent, refusing any business not closely upto the established level of the market as quoted. Northern furnaces anticipate an advance on Foundry Irons, especially as the market has been relieved of many odd lots of Iron which accumulated last year and have choked the market like brambles, so that now there is a clear field and a more encouraging outlook. There have been quite a number of orders ranging between 100 and 500 tons and innumerable carload lots. There is no special animation or feature at the close, but a good, steady, healthful movement promising encouragement, but no extraordinary developments. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.20 to 14.50
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

Metal Market.

Pig Tin.—There have been several fluctuations in the wholesale price of Pig Tin. Early in the week prices receded for prompt and current month deliveries, considerable business being done at the lower rates. Then prices rebounded 0.20¢, receding later about one half that figure, and at the close of the week regaining the loss, the market closing firm. Arrivals from London have been quite heavy, but the greater portion went out on old contracts, and the estimated full supply had no unfavorable influence. Quotations on small lots of Straits from store are unchanged from last week, viz., 14½ @ 15¢ per lb.

Copper.—The condition of the market has not changed in any great degree, but, superficially, shows better tone consequent upon more reserved offering and very fair demand. The Calumet & Hecla Company are said to have recently placed 2000 tons. General consumption is reported as fairly up to the average for the season and retail business is fairly brisk. Prices for small jobbing quantities are unchanged on a basis of 10½¢ for Lake Ingot.

Pig Lead.—Wholesale prices for Common Western have eased off for prompt and near future delivery. The decline is partly due to speculative realizations, but cut rates on east bound freight have had some influence, and prospective larger production has also stimulated selling interest in some degree. The retail demand is moderate and prices for small lots of American from store are unchanged, ruling at 3½¢ @ 3¾¢ per lb.

Spelter.—A steady tone characterizes the market. There has been only moderate trading here and little life to demand, but short interest elsewhere and liberal deliveries have had sufficient force to hold prices quite firm. Small parcels of good Western brands from store rule at 3½¢ @ 4¢ per lb.

Sheet Zinc.—The volume of business is small. Prices for 600 lb casks are on a basis of 4½¢, with smaller lots from store quoted at 5¢ per lb.

Antimony.—Competition is keen and prices are rather weak. In small lots, Hallett's is quoted at 8¢, and Cookson's at 9½¢ @ 9¾¢ per lb.

Tin Plate.—Buying interest has slackened off considerably both for prompt and future deliveries. The canning demand is the only quarter in which any life is visible, and the requirements of this class of consumers is disappointing as to volume and below the average for the season. The market is in a slow routine condition. Re-

ing an excellent movement in this regard.

Notes on Prices.

Wire Nails.—The situation in Wire Nails is substantially the same as for the past week or two. The volume of business is fair and with the large orders recently placed the manufacturers are fully occupied. An evidence of the improvement in general business is seen in the fact that some parties are requesting that shipments be made a little earlier than was first stipulated. Prices are without change, and on the whole quite well maintained. Manufacturers refer to the indications as pointing to a steady demand during the season.

Advices from Chicago.—Manufacturers have passed through a quiet period since last report, although a good inquiry has been received by most of them. Buyers, however, appear to be waiting either to test the market thoroughly or to see whether the demand from their own customers will warrant the purchase of much stock. The quietness has as usual led to a little unsettling of values, but carload lots are held fairly well at \$1, Chicago. Jobbers are not having quite so large a trade from stock, and continue to quote \$1 to \$1.05 for small lots.

Cut Nails.—The prices referred to in our last issue as adopted by the Eastern manufacturers are quite well maintained, as follows: For carload lots at mill, 70 cents; for less than carload lots at mill, 80 cents; and for small lots on dock or from store in New York, 90 cents; the above quotations all being made on the basis of 60-cent average, with an advance in the base price where the average is less. The volume of business is somewhat larger.

Advices from Chicago.—Manufacturers are in receipt of about the usual number of orders. Prices are continued on the basis of \$1 for small lots from stock.

Barb Wire.—There is a good demand for Barb Wire and prices, while there are evidences of irregularity, are on the whole quite well maintained.

Advices from Chicago.—The volume of business in Barb Wire appears to have been somewhat better than on Wire Nails. The movement from factories in this vicinity has been considerably larger. Manufacturers in other sections, however, have not been so well supplied with orders as the local concerns, and efforts have been made to secure more business by a slight reduction on price. Small lots from stock are quoted at \$1.65 for Painted and \$2 for Galvanized Wire.

Sash Ribbon.—The Aluminum Bronze Sash Ribbon put on the market by Austin & Eddy, 117 and 119 Broad street, Boston, Mass., is sold from the following list, which is subject to a discount to the trade of 70 per cent.:

5-16 Inch Wide.		
No. 122, for Sash weighing not over 20 pounds.....		Per foot. \$0.3
3-8 Inch Wide.		
132, for Sash weighing not over 30 pounds.....		3½
133, for Sash weighing not over 50 pounds.....		4½
134, for Sash weighing not over 75 pounds.....		5½
1-2 Inch Wide.		
154, for Sash not weighing over 100 pounds.....		6½

Solid Emery Whetstones.—The Tanite Company, Stroudsburg, Pa., have reduced prices on their solid Emery Whetstones. The goods are now quoted at \$5 per dozen (instead of \$9 per dozen as heretofore), subject to a discount of from 50 to 60 per cent., according to quality.

Glass.—A meeting of the Indiana Glass manufacturers was held at Indianapolis, April 2, at which time, it is understood, they agreed to advance prices to 89 per cent. discount on single and 89 and 5 per cent. discount on double strength Glass. The statement is made, however, that since that meeting Indiana Glass has been sold in Chicago at from 89 and 5 to 90 and 5 per cent. discount. It will be understood that the foregoing figures represent prices on car lots of Glass. The result of the next meeting of the National Association of Window Glass Manufacturers, which was formed in Pittsburgh, March 19, will be awaited with much interest by the trade. It is reported that there are manufacturers in the territory of both the Indiana and Pittsburgh districts who are not altogether in favor of a consolidation of interests. In case no agreement is reached by the manufacturers as a result of the several meetings, the conference have probably had the effect of bringing about a better understanding, which will prove of future benefit.

Old Metals.—In its general features the market for Old Material presents no quotable change from the conditions noted last week. Prices are firmer and the demand fair. Dealers' purchasing prices for moderate sized lots, New York delivery, are approximately as follows:

Heavy Copper.....	lb 7 c
Light and Thinned Copper.....	lb 6½ c
Heavy Brass.....	lb 4½ c
Light Brass.....	lb 3½ c
Lead.....	lb 2½ c
Tin Lead.....	lb 2½ c
Zinc.....	lb 10 c
No. 1 Pewter.....	lb 12 c
No. 2 Pewter.....	lb 5½ c
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross ton 7.50 @ 8.50
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.00

Old Rags, Paper, &c.—The general condition of the market is unchanged, and dealers' purchasing quotations do not vary from those made last week, namely:

No. 1 White Rags.....	lb 3 c @ 3½ c
No. 2 White Rags.....	lb 2½ c @ 2½ c
Mixed Rags.....	lb 2½ c @ 1 c
Blues and Sides.....	lb 1½ c @ 1 c
Hard Sized White Shavings.....	lb 2½ c @ 2½ c
No. 1 White Book Shavings.....	lb 1½ c @ 2½ c
No. 2 White Book Shavings.....	lb 1 c @ 1½ c
Light Book Shavings.....	lb 1 c @ 1 c
No. 1 Mixed Shavings.....	lb ¾ c @ 1 c
No. 2 Mixed Shavings.....	lb ¾ c @ 1 c
No. 1 Printed Books.....	lb 1 c @ 1½ c
Ordinary Mixed Books.....	lb 1 c @ 1 c
Newspapers.....	lb 1 c @ 3-5 c
No. 1 Manila Paper.....	lb 1 c @ 1 c
No. 2 Manila Paper.....	lb ¾ c @ ¾ c
Bogus Paper.....	lb ¾ c @ ¾ c
Common Paper.....	lb ¾ c @ ¾ c
Straw Chips.....	lb 1 c @ 1 c
Binders' Chippings.....	lb 1 c @ 1 c
Jute Butts.....	lb 1½ c @ 1½ c
No. 1 Jute Bagging.....	lb 1 c @ 1½ c
Mixed Bagging.....	lb ¾ c @ 1 c
No. 2 Bagging.....	lb ¾ c @ ¾ c
Hemp Twine.....	lb 3 c @ 2½ c
Manila Rope.....	lb 2 c @ 2½ c
Jute Rope.....	lb 1½ c @ 1½ c
Mixed Rope.....	lb ¾ c @ ¾ c

Old Rubber.—The market is irregular and prices considerably weaker. The following quotations represent about the current rates paid by dealers in the city:

Car Springs, ton lots, lb.....	3 c @ 3½ c
Rubber Shoes, carloads, delivered at factory, lb.....	4½ c @ 4½ c
Rubber Shoes, less than carloads, lb.....	4 c @ 4 c
White Wringer Rolls, lb.....	3½ c @ 3½ c
White Syringes, lb.....	3½ c @ 3½ c

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THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, April 20 1895.

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Heating Contracts.

There is a strong feeling in the heating trade that many of the contracts that have been recently placed have been at figures too low to be profitable to the trade. This, if true, may be partly due to the eagerness of those who have been slack of work during the past two years to make up the deficiency and partly to the exceptionally low price of the materials used at the present time. The figures quoted in some cases are so low that contractors of successful practice and good business reputation assert that the construction cannot be finished without a loss. It is pointed out that the contract for heating an exceptionally large building has been awarded to a bidder whose price was several thousand dollars lower than his lowest competitor, and some amazement is manifested at this occurrence. A contractor who is ordinarily well occupied reports that at the present time he is doing very little, and remarks that "when the other fellows get all the cheap work they can handle the market will not yet be fully supplied and I will then come in and get my share of work at a profitable figure." There is some probability that this statement is correct, but it requires more than ordinary courage to take such a stand. Others claim that good work is worth a good price, and there is no reason why a bad precedent should be established by taking work at low figures to keep the shop busy and give architects and contractors the opinion that buildings can be heated for a price from 10 to 20 per cent. below what should be had. Others, who are noted for their foresight in buying, state that the price of materials will be higher before some of the contracts which have been awarded are completed, and instead of the contractor making a loss, due to an advance over the present low prices, he should hold

to the old prices and secure to himself the additional profits that can be gained from close buying. Some benefit may be derived from studying the business practice of a decade or two ago, when no man in any line of business expected to be occupied for twelve months in the year, but thought to make sufficient profit during his busy months to carry him through the idle ones.

Location of Registers.

The exact proper location of supply and exit openings in rooms of the character of schoolrooms is a matter regarding which there is evident difference of opinion. Almost without exception the older school buildings, whether heated by steam or by furnace, will be found to have the supply registers at the floor usually, but by no means always near the inner walls. The outlet registers will be found as diversified in their location as are the buildings. Modern practice almost universally recommends placing the supply register in an inner wall at least 8 feet to the bottom above the floor. From this opening the air, in any system of adequate capacity, will issue at a velocity of about 400 feet per minute. This will give it sufficient impulse to cause it to pass above head level to the outer walls, where their cooling action will cause it to fall to the floor, along which it will travel in a mass toward a properly provided outlet register in the same inner wall as the supply register, but at the floor level. The most equitable heating will result from the location of the supply register so as to force the air along one cold side of the room, while the location of the outlet register in the same wall as the supply, but as far from it as possible, will compel the most complete circulation of the air within the room. Registers for exit near the ceiling are useful when the supply of air from the ventilating apparatus is replaced by that from open doors and windows in mild weather; but such registers at the ceiling should never be employed when the air supply is from the regular opening in the inner wall.

Apartment House Fires.

Within the last two weeks an extraordinary epidemic of apartment house fires has occurred in the residential district of New York City west of Central Park. The circumstances attending many of these fires point to the conclusion that they were in the majority of cases the work of incendiaries, under-

taken presumably for purposes of robbery. Only a short time ago a gang of firebugs who had been conducting their criminal industry on the east side down town district of the city was detected and broken up, its members being awarded exemplary sentences in State's prison. In their case the object was to defraud the insurance companies. In the more recent cases the evident purpose of the incendiaries has been robbery. Possibly, as has been suggested, the fires may have been started by some criminally insane person. The effect in either case, however, has been disastrous. Loss of property, and even of life, has ensued, and a general feeling of alarm has been kindled in the neighborhood. So far the crimes have not been clearly traced to their author or authors, but vigorous steps are being taken by the police department to prevent the perpetration of further damage of this character.

Incendiarism Made Easy.

These occurrences bring up the inquiry: How was it possible for incendiaries to carry out their work in this wholesale manner without detection? The fact is that property owners and tenants are themselves largely to blame in the matter. They have, in a measure, paved the way for arson by their neglect of common precautions. In the first place, in the majority of instances, apartment house cellars are left unguarded and accessible to every comer, often by night as well as by day. In the second place, in most of these houses, especially those of the older class, the dumb-waiter shafts are, as a rule, incased in wood, offering the most favorable conditions, in readily combustible material and a good draft, for the spread of a fire started below. If tenants would insist upon these shafts being fireproofed by means of metal sheathing, incasing at least their lower parts, and arrange to properly guard their cellars from intruders, their houses would be rendered comparatively safe from incendiary fire, to which, under the present hazardous conditions, they are always subject. Property owners, too, will find it to their interest to adopt these simple precautions, both by securing the safety of their property and also in a lowering of the rates of insurance. It has been announced that the fire underwriters of this city are now raising very considerably the rates on risks of this character.

Robert V. Welton, one of the founders of the Waterbury Brass Company, died at Waterbury, Conn., on April 16, aged 83 years. He represented the town in the General Assembly in 1853-54, and was supervisor of highways for 25 years.

THE LETTER BOX.

Inside Cold Air Duct.

From JACK, Ontario.—If the gentlemen who are conducting the discussion in *The Metal Worker* on inside air and other furnace topics lived here, where the thermometer quite frequently goes down to 25° and 36° below zero, sometimes accompanied by a stiff north wind, they would find all the cold air in the house they could possibly use, without trying to heat any from outside. When the temperature reaches this point buildings have to be very tightly constructed; in fact, much more so than we generally get them here, without there being enough leakage of air, around doors and windows, even with both double, to supply air for furnace and still have it quite fresh. Inside cold air, under these conditions, has proven very satisfactory here. My practice has been to set a face plate in the floor and fasten a galvanized iron box into the opening. This box is then joined by galvanized pipe of suitable size, run at cellar ceiling to the most convenient place to connect with furnace pit, if you are situated so that you can have one. Here where you can get a cold air pit under about one furnace in 50, the duct is run down at the most suitable place, even if it may be alongside the casing, and passed just through the casings immediately above the bottom ring or base. When there are several ducts they should be as evenly distributed around the furnace as possible. The cold air ducts should have a capacity equal to 80 per cent. of the hot air pipes, which gives very satisfactory results. They will even work fairly well when the former are 70 per cent. of the latter, but a smaller percentage than this will prove unsatisfactory. Most rooms that have a hot air register will require a cold air duct out, except the doors are left open so that there may be circulation of air. Cold air faces will work best in coldest part of room, near outside doors and windows, but should never be placed on second floor unless hot air is wanted through the ducts. In houses so built that there is not leakage of enough cold air around doors, windows and other parts of the house, a small duct from outside may be used with advantage when fresh air is wanted, but it must be very closely made and fitted with a damper or slide, so that it may be completely shut off if necessary. This outside air duct will be connected to the furnace in the same manner if it were from inside.

If "C. S." Cleveland, Ohio, would stop his cold air duct when he gets through the casings I think he would find no hot air come from it. He should not leave on even the elbow.

I have to take issue with "H. R. D.," Brooklyn, N. Y., in introducing the cold air, if I understand him aright, at the top of the furnace, in such a way that it will partly heat before it reaches the bottom where it passes into the furnace proper. I have seen many brick set wood furnaces that were failures as heaters, all because the cold air was brought in at the top and passed down between the walls, where it was sup-

posed to go partly heated into the furnace. The trouble was, it was changed from cold air to warm air during the passage and before it reached the bottom, consequently it went back the way it came. This condition of affairs I have found to be always cured by introducing the cold air at the bottom, when the air always traveled in the right direction.

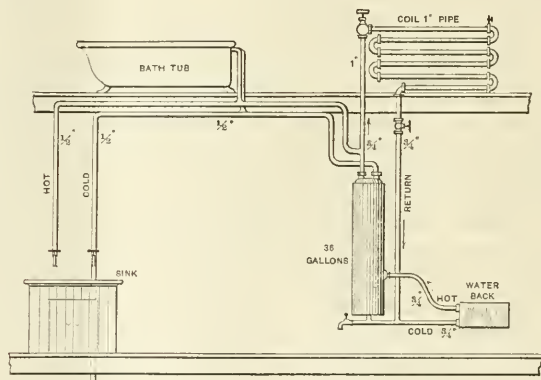
Kitchen Boiler Heating.

From B. C. B., Maryland.—Will you please give me some information on the proposed plumbing system shown on the sketch? I have told my customer that his bathroom could be heated from the hot water boiler in the kitchen by placing a radiator or coil in the bathroom and running a pipe from the boiler to and from it. I have con-

be taken from the water back to receive the pipe from the boiler and the radiator return. Another question which must be decided is the capacity of the stove and water back to heat the additional quantity of water which will be required for heating the bathroom.

Home Made Tinware.

From A. D. SMITH, San Diego, Texas.—My experience in the manufacture of tinware in the shop as home made ware seems to be similar to that of "J. G. F. W.," Indiana, whose letter appears in *The Metal Worker* of March 9. In my case I have not made much of an effort of late to compete with factory goods by making the same grade of goods, but I use IX and IXX tin and put up a better grade of ware. I will be glad if "J. G. F. W." will send



Kitchen Boiler Heating.

cluded to refer this matter to the Letter Box, knowing that its readers are always ready to give assistance. Is it practicable to heat a room of the size in question, the room being 10 x 14, with a 7 foot ceiling? The house is built of stone, the walls being 20 inches thick. What changes are necessary to make such a system work? Must I use a coil or a radiator, and of what size and length? I would prefer to use a radiator.

Note.—The room in question being over the kitchen, it is probable that it will not be a difficult room to heat, consequently a foot of radiating surface will probably heat 30 cubic feet of space. As the room contains 980 feet, a radiator exposing 33 square feet of surface would be required. If the radiator is preferred, and there is ample space for it, there is no reason why it should not be used. The piping seems to be arranged in a manner that would produce satisfactory results if the sizes were correct. A 3/4 inch pipe is large enough to supply the heating surface in the bathroom. A 1-inch pipe should

me his name and address, as I wish to correspond with him.

Pattern for Offset, Oblong to Round.

From A. W., New York.—The demonstration in *The Metal Worker* of March 23, entitled, "Pattern for Offset, Oblong to Round," is a splendid piece of work. The drawings are so accurate and cleanly cut, the accompanying description so plain and easy to understand, leading the beginner so gradually and by such easy steps from the simple "Plan and Elevation" up to and through the more intricate mazes of triangulation. There is, however, a slight misprint in the description. It says: "From V on V W set off the length of lines in B m G, Fig. 4." It should read instead: "From V on V U," &c. This might prove a stumbling block to some young apprentice of meager education (and I am sorry to say we have too many of that class). But, on the whole, these three pages command the respect and gratitude of every tinner, especially of furnacemen, and should fill them with admiration, inspiration and gratification.

The Peppermint Test.

From INQUIRER, New York.—Will *The Metal Worker* or some of its readers tell me how to make a peppermint test on an old job of plumbing?

Note.—We hope some of our readers will describe in detail their method of making a peppermint test. In order that our correspondent may have a guide we give the following suggestions for a course of procedure. Care should be taken to see that all the traps are sealed with water, that the fresh air inlet at the house trap is stopped, and, if there is more than one vent pipe coming through the roof, that all are stopped but one. The windows and doors in the house must be closed. If possible it is better that the test should be made by two persons, one being on the inside of the house and the other on the outside. The one on the outside must be provided with 2 ounces or more of oil of peppermint, according to the size of the house, and a bucket full of hot water. After pouring the oil of peppermint down the open vent pipe at the top of the house pour the hot water in on top of it to insure the peppermint being washed down through the drainage system. As the oil of peppermint has a very pungent odor the smell will be readily detected if there are any unsealed traps or breaks in the piping or joints. If the test is performed by two persons, so that the one who pours the oil of peppermint can stay on the outside of the house, there will be no danger of the smell being carried into the building. The person on the inside who is to look for the leak must carefully search the pipes in one room before passing to the next and in that way satisfy himself either that there is no leak or else discover the location of the leak.

Folding Camp Equipments.

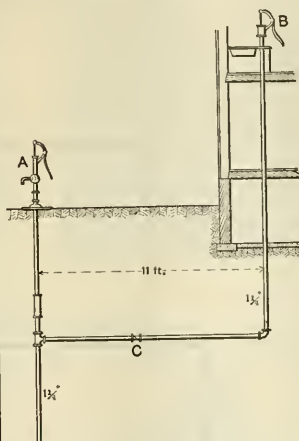
From H. A. S., Grangerville, Idaho.—I would like to have some of the readers of *The Metal Worker* inform me how to make a folding reflector, or bake oven, and also how to make a folding camp stove.

Two Pumps on one Pipe.

From W. K., Passaic, N. J.—Will *The Metal Worker* or some of its readers advise me what to do under such conditions as those shown in the cut? A is a pump in the yard, 11 feet distant from the pump B, in the kitchen, and which stands 18 inches higher than A. Should a check valve be placed on the suction pipe to B, at the point marked C?

Answer.—In *The Metal Worker* of June 10, 1893, this subject was discussed and an illustration was shown of a charging chamber for a pump when more than one pump was connected to the suction pipe. This charging chamber was of heavy iron, so that it would not readily collapse, and in size was made about four times as long as its diameter. In connecting the pumps with

it the suction pipe from the pump connected with the bottom of the chamber and the suction pipe from the well connected at the top of the chamber. It was considered that several pumps might be connected with such a chamber. A branch connection similar to that our correspondent proposes was also mentioned. If successful, however, it would be necessary for the valves in the pump to be absolutely tight and to continue so. If a valve in one of the pumps should leak it would interfere with the operation of the other pump, and this risk must always be taken into consideration. As there would only be a slight additional expense attached to running the suction pump down into the well, the certainty of success would more than repay it. The pumps will work connected as



Two Pumps on One Pipe.

shown, as long as all the valves are perfectly tight. A foot valve should be used on the bottom of the suction pump.

Repairing Gasoline Stoves.

From W. E. H., Philadelphia.—Answering "L. R. B." in *The Metal Worker* of April 13, the trouble mentioned with the New Process gasoline stove would be due to heavy or impure gasoline, caused either by having gasoline in a can which had previously been used for kerosene or by the dealer furnishing the impure article. The use of this grade of gasoline will cause the needle points to become gummed up with the heavy substance in the fluid. This will cause the gasoline to drop unevenly, and at times to momentarily stop dropping altogether. The flame will then die out, and when the gasoline cuts the accumulation of gum at the needle point it will again drop, but the vapor, instead of being consumed, passes off unconsumed and causes a disagreeable odor. We have had tanks sent to us to repair in which we found a sediment similar to linseed oil, which, of course, made the tank entirely worthless. The lack of operation of seven out of ten stoves can be traced to dirt or sediment produced as above. New Process gasoline stoves need to be kept religiously clean.

From C. A. W., Chicago, Ohio.—In answer to "L. R. B." whose inquiry appears in *The Metal Worker* of April 13, would say that he should take the cap from under the burner and take the center tube out and put new asbestos strips in the bottom of the burners. Also see that the sub burners are clean and put all back tight and pack the top plate with asbestos. I think by so doing his stove will be all right, as I clean a great many of them and have no trouble.

Joints in Green House Piping.

From SAMUEL A. HEINS, Rondout, N. Y.—In answer to "Y" in *The Metal Worker*, April 6, who wants to know how to make joints for cast iron pipe, would say that I have had some experience in piping conservatories with both cast iron pipe and wrought iron pipe, and I know that there are different ways of making joints or connecting cast iron pipes. I have made them several ways. One way would be with iron filings and sal ammoniac, taking a layer of jute packing and tallowing it well and driving it in the hub a little; then put in wet iron filings and pulverized sal ammoniac. Another way would be to use the jute packing in the same way and make a stiff paste of red lead ground in oil and mixed with litharge until it becomes like paste and insert it in the hub; and still another way would be to use the jute packing and the best Portland cement, and the last way would be to use a cement that I manufacture. I have found it to be the best cement for all cast iron joints; it will get as hard as iron itself in from three to five hours. If "Y" has never fitted up a conservatory it would be best for him to consult some person who knows something about that kind of work to make it work satisfactorily.

From T. C., Boston.—In answer to "Y." in *The Metal Worker* April 6, I have had the direction of work where rust and other joints have been made in cast iron pipe for hot water apparatus. These joints have been made of about eight parts of iron filings to one part of sal ammoniac, with sufficient water to moisten the whole. To make these joints a small quantity of oakum is put into the hub to stop the mixture from passing into the pipe. Then the hub is filled and calked in layers until the hub is full; this kind of joint, when properly made, will harden quickly. The so-called red lead joints are made by taking white lead that is ground in oil and adding red lead to make it of the proper consistency. Then oakum that has had a small quantity of boiled oil mixed with it is put into the hub to stop the lead mixture from getting into the pipe, and afterward the hub is filled with alternate layers of lead and oiled oakum. To fill and make a solid joint each alternate layer must be properly calked, and if properly made such joints will be good ones, but I cannot say which of the two is the best. The lead joints take more time to harden than the rust joints do. Formerly, when sulphur was used with the filings, &c., in the proportion of eight parts of iron, one of sal ammoniac and two of sulphur, the joints would burst the hubs of the pipes sometimes, and that caused such joints to be discarded. But when the sulphur is omitted rust joints are good and can be depended upon.

Elbow in Tapering Pipe.

From F. W. M., Baltimore, Md.—Will the Editor or some of the readers of *The Metal Worker* be kind enough to show me how to cut the patterns for a tapering square elbow in six pieces?

Answer.—If our correspondent will refer to "The Metal Worker Pattern Book," page 129, he will see there a solution for a three piece tapering elbow which embodies all the principles necessary for the solution of the other problem. Some time ago there was also printed in *The Metal Worker*, we believe, the patterns for a six-piece tapering elbow which will come nearer to our correspondent's wishes. We cannot, however, recall the exact date of the article in question. If any of our readers would like to present a solution of this problem for our correspondent we shall be glad to publish it.

Making Fire Pot Coil.

From E. G., Delaware.—I wish to put a coil of 1-inch pipe inside of a fire pot of an egg cylinder stove. The fire pot is made in two sections bolted together, and is 14 inches in diameter at the largest point. I want the coil to go around the fire pot three times. How shall I proceed to make the coil? I shall drill the upper and lower sections for the flow and return connections to the coil.

Note.—It seems practicable for such a coil to be made in the average shop, and we have no doubt but some of our readers have done it, and we hope they will describe their method.

Holes in Copper Tank Lining.

From COPPER, Chicago.—As the tank referred to by "R. R.," Hope Valley, R. I., has been in use 20 years, it would be difficult to find out just how the tinning was done. It is presumed that soldering acid and sal ammoniac were used in the operation of tinning, and as they are "strong medicines" they may have caused the copper to corrode. By using nothing but rosin as a flux for tinning copper the corrosive action of the "medicines" is avoided.

Paste for Asbestos Paper.

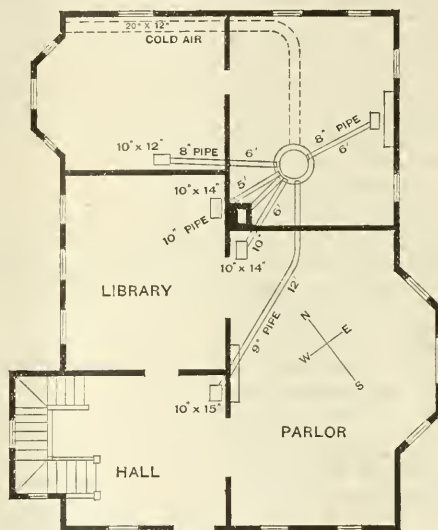
From C. A. W., Chicago, Ohio.—In reply to the inquiry of J. Callaghan & Sons, asking for the best method of fastening asbestos paper on hot air pipes, I soak the paper in a tub and have a fire in the furnace so the pipes are hot. I have never yet had any come loose. I use a brush to make it smooth and am careful that there is no air between the paper and pipe. Put on in this way it will shrink very tight and be faster than it would be if pasted.

From O. B. G. Bridgeton, N. J.—I notice in *The Metal Worker* Letter Box of April 6 J. Callaghan & Sons ask for information about a paste for asbestos paper. I think the best and cheapest way in wrapping hot air pipe with asbestos paper is to fasten it on with stove pipe wire. Put a piece around each end and in the middle and 8 or 10 inches apart. A pair of small snips or pliers that can be carried in the pocket is very handy for taking down this work. Whenever it is necessary to take

down one of these pieces to clean it simply snap the wires and the paper is off, whereas if it is pasted on there will be a loss of time, patience and paper. I know, for I have been there. I haven't pasted any now this seven years and am always thankful that I have not done it.

A Balky Furnace.

From J. H. W., Bridgeport, Conn.—I have seen considerable discussion in the columns of *The Metal Worker* lately relative to a peculiar furnace experience. While the readers are in a corresponding mood I would like to get from them some advice and a remedy for the bad operation of a balky furnace. I give a sketch of the house, which stands exposed in the country, on high ground, with nothing to break the force of the wind. The house faces the southwest.



A Balky Furnace.

It contains ten rooms, which average 12 x 15 feet, with 9 foot ceilings, excepting the parlor, which is 18 feet long. The sketch shows only the lower floor, but it will serve to represent the second floor also, as the arrangement is very similar. The location of the heater, which is simply large, cannot be changed owing to the basement and its uses. It is set over a brick pit, the cold air being conveyed to it through a trench under the cellar bottom. There is no difficulty experienced in heating the house, no matter how cold it is, except in windy weather; but with a stiff west or northwest wind blowing, the registers in parlor, hall and library will be cold, and although a strong fire is maintained it is difficult to get heat through the pipes to these rooms. When the wind is north or east the house is sufficiently warm and the heater behaves all right. The question is, what can be done to overcome this difficulty? How can the piping be arranged or the rooms be ventilated so that the hot air will flow to them in sufficient volume, as it does in still weather? Will some of the experienced furnacemen kindly state what can be done to bring about the desired result on the first floor?

could tell me what these drops or streaks are caused by.

A Dispute as to Sizes.

From C. M. F., Tennessee.—One of our customers ordered some pans to be made. The order read: "Two top pans, 48 x 16 inches, 2 inches deep; two bottom pans, same depth as top pans, 23 inches larger each way." We made the bottom pans 50½ x 18½ inches and he claims we should have made them 53 x 21 inches. Which is right?

Note.—According to the reading of the order as furnished by our correspondent we think that he was right in making the pans altogether 2½ inches longer and 2½ inches wider. His customer evidently had the idea that the measurements would be taken from the center of the pan and that 2½ inches larger each way would then mean 5 inches longer and 5 inches wider. But we do not think that the ordinary sheet metal worker would so interpret the order.

Cleats for Tin Roof.

From APPRENTICE, Boston.—Will some of the many readers of *The Metal Worker* who are skilled in the art of laying tin roofs kindly inform me the number and location of cleats required when laying a flat seam tin roof with 14 x 20 or 20 x 28 tin. What method gives the most satisfactory results, nailing through the tin, or by using cleats?

Trouble With Rinsing Tank.

From A. W., Perryville, Mo.—I would like to have some help in a difficulty I have had with a barkeeper's rinsing tank. It is lined with galvanized iron and well water is used in it. The drops of water which dry on the glasses after rinsing leave dirty spots or streaks. I wish some of the readers

PLUMBING and GAS FITTING.

Denver Plumbers.

At the second meeting of the Master Plumbers' Association 47 members were present, 16 absent. The secretary's report of the year's business was read and approved. The retiring officers each received congratulations for his good work. The following directors were appointed: P. H. Balfe, George E. Smith, James Shannon, Archie Davis and Curtis Mann. The officers elected for the ensuing year are: George E. Smith, president; P. H. Balfe, vice-president; James Shannon, treasurer; Archie Davis, secretary.

After the new officers took their positions a surprise was given the retiring officers. The late secretary, Chris Irving, was presented with a handsome gold watch and chain. The treasurer, James Shannon, received a silver tea set, and ex-President Daniel Frey got a gold-headed cane, and also a handsomely mounted walking stick of artistic make was presented to James Johnson for his excellent services as secretary in the State Board of Plumbing Examiners. After the recipients, each in turn, had made appropriate speeches all the members adjourned to more commodious quarters and celebrated the event with song and story.

Sanitary Fixtures.

The waste of water in plumbing fixtures used in public buildings has led to a demand for apparatus which will

is designed for use in private residences and suites of apartments in hotels, where some objection has been found to

requirements. It is made in different kinds of wood and different grades of ornamentation and is adapted for a



Wash Down Closet with Hidden Tank.

the open wood work and the exposed earthenware closets so generally in use. This closet is finished as a handsome

wide use. Fig. 2 shows the Weeden waste preventing urinal, which, it is claimed, wastes no water, as it is only flushed when in use and that the flushing continues only as long as used. A siphonic action is caused which brings a liberal flush of water down the flush pipe and thoroughly scours the entire internal surface. An automatic flush tank flushes continuously at fixed periods, whether in use or not, wasting a great deal of water. Where water meters are in use it is claimed that a reduction in the water bill is certain to follow the use of this fixture. It is also claimed that these urinals will keep sweet and clean without the use of camphor, carbolic soap and other disinfectants.

Wash Down Closet with Hidden Tank.

A water closet specially adapted for use in public places is shown in the accompanying illustration and is made by the Dalton-Ingersoll Company, 169-175 High street, Boston, Mass. It is of the wash down type and is arranged with a low down flush tank operated by a lever. With this closet a large number may be placed back to bank in a comparatively small place and the flush tank, soil pipe and all of the apparatus placed in an inclosed space between the two rows of closets, to which access may be gained by means of a door conveniently located. This arrangement is said to be valuable for the opportunity which it offers for getting at clean out openings in the soil pipe or making general repairs without marring or disturbing any of the exposed fixtures. The closet is also made to be operated by seat action. It is said that local ventilation can be



Sanitary Fixtures.—Fig. 1.—The Aida or Chair Closet.

overcome the trouble, and our illustrations show some new goods for this purpose recently put on the market by Henry C. Weeden, Boston, Mass. Fig. 1 shows the Aida or chair closet, which

chair, and the flush tank may be located above it, as shown, or in an adjacent room, so that all appearance of a water closet is removed. It is said that the closet meets the most rigid sanitary

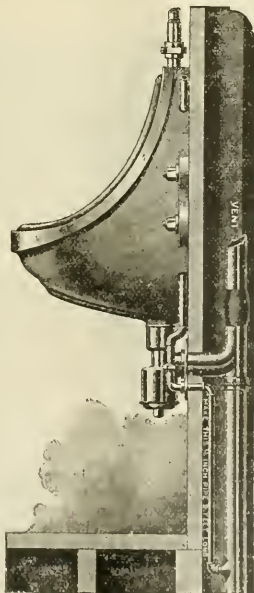


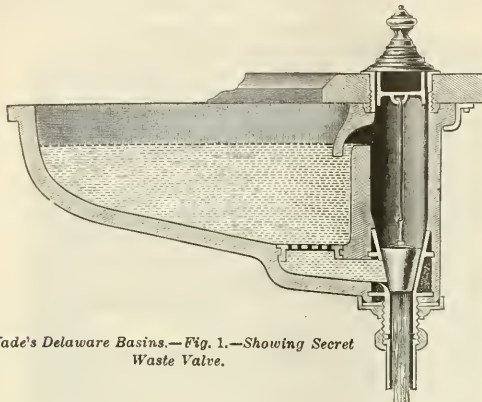
Fig. 2.—Waste Preventing Urinal.

obtained by boring a hole in the tank cover and inserting the vent pipe in it so that the end does not project below the lower surface of the cover.

Wade's Delaware Basins.

The demand for sanitary fixtures of attractive appearance has brought out many lavatories which have a secret waste and overflow. In our illustration

ited the Quebec master plumbers on Monday, April 8, where they attended a large meeting composed of the members of leading firms. Spirited addresses were made and general enthusiasm was the order of the day, and before the meeting broke up it was resolved to form a master plumbers' association for Quebec City in affiliation with that of Montreal and working under the same act of incorporation. A meeting will



Wade's Delaware Basins.—Fig. 1.—Showing Secret Waste Valve.

we show the Delaware basin made by J. J. Wade & Son, 276 Dearborn street, Chicago. These basins have the overflow pipe made as a part of them, and being of glazed earthen ware they cannot corrode and afford no opportunity for filth to cling to the sides. As shown in Fig. 1, the waste is controlled by a secret valve operated by an ornamental handle which is set in the top of the

basin. The valve is so constructed that it may be readily removed, the overflow then being freely accessible and easily cleaned. Fig. 2 shows the same basin arranged so that a flush jet may be attached to the overflow for thoroughly scouring and cleansing the overflow and trap.

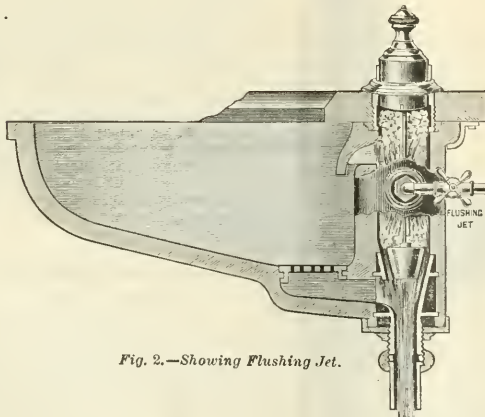


Fig. 2.—Showing Flushing Jet.

basin slab. The valve is so constructed that it may be readily removed, the overflow then being freely accessible and easily cleaned. Fig. 2 shows the same basin arranged so that a flush jet may be attached to the overflow for thoroughly scouring and cleansing the overflow and trap.

Dominion Master Plumbers.

We learn that the Master Plumbers' Association of Montreal and vicinity is progressing. A delegation consisting of J. Lamarche, president, and J. W. Hughes, corresponding secretary, vis-

association will be to agitate for such a law. We have no doubt the best citizens of the city will heartily co-operate with the master plumbers in this work. The object sought is a very desirable one, affecting the community very closely. The Toronto Association is also in vigorous working order and steps are being taken to form associations in all cities of the west as well as those in the Maritime provinces. We believe it is the desire of the Canadian associations to affiliate with the National Master Plumbers' Association of the United States.

Will Construct Roman Baths.

Plans have been completed for the remodeling of the old Commercial Hotel, Lake and Dearborn streets, Chicago, by the Chicago Roman Bath & Hotel Company, which have taken a lease on the property. The basement and first and second stories will be fitted up as a bath establishment, with hot and cold swimming pools for men and women and with office and restaurant for the hotel.

The main corridors and office of the first story will have mosaic floors, marble stairs and ceiling, and marble stairs leading to the upper floors. The Lake street front of the building will be occupied by three stores and the hotel entrance, the remainder of the first floor being devoted to the bathing establishment. This will be patterned after the Vienna baths and will be in imitation of the baths of Caracalla, in ancient Rome. There will be separate entrances and baths for men and women, consisting of warm and cold plunges, Russian, Turkish and electric, and a large cold swimming bath. These rooms will be fitted up with marble, scagliola and Pompeian decoration. The swimming baths will be lined with marble and tile. The floors will be of mosaic and the walls wainscoted with marble, with columns, pilasters and arches of polished foreign marble. Over the wainscoting will be Pompeian decorations in the style of the Roman baths of Pompeii. These baths will be illuminated in daytime with skylight and colored glass ceiling lights. All the minor baths will be finished in marble. Around the bathing establishment will be sleeping rooms finished entirely in cement plaster, with marble floors and ceilings, and perfectly ventilated. Above the baths will be two stories devoted to sleeping rooms to be used in connection with the bathing rooms.

The bath portion will be heated and ventilated with hot air apparatus; fans and heating coils will be located in the basement and hot air will be forced into the various rooms. These will be thoroughly ventilated through ducts carried up to the roof, and a constant supply of warm air will be supplied to other portions of the bathing establishment. In the basement will be a series of special bathrooms. The bathroom portion will be lighted at night with arc and incandescent lights. The ceilings of the various bathrooms will be paneled, groined and arched, giving the effect of the old Roman baths.

TRAPS AND VENTS.

GROUND WAS BROKEN in New York City last week for a garbage crematory that is to occupy a vacant lot at the foot of East Third street. It is merely a trial plant, costing about \$7000.

AMONG recent incorporations at Albany, N. Y., is the Sewer Pipe Supply Company of Buffalo, organized to deal in sewer pipe, flue linings and cement. The directors are Alfred Lyth, Nathaniel Barnum and William F. Dunsbaugh of Buffalo.

MAYOR SHORTLIFFE of Wilmington, Del., has written a letter to the Mayor of New York, giving details in regard to the system of garbage disposal in operation in his city. He claims that, by the plan in use in Wilmington, the problem of the sanitary disposal of garbage has been successfully solved. After a year's trial their crematory has proved itself perfectly satisfactory,

nearly 9000 tons of garbage having been destroyed last year, besides horses, dogs and other animals. The cost of destruction was very reasonable, not exceeding five cents *per capita* per annum, computing interest on plant and cost of maintenance. The Wilmington Board of Health, moreover, reports that since the crematory has been in existence there has been a decrease in deaths from zymotic diseases of nearly 8 per cent. over the preceding years.

THE VULCAN COMPANY, 315 Madison avenue, New York, are putting on the market a plumbers' fire pot of a new type, using gasoline as a fuel. It is made of heavy sheet iron and is a cylinder about 8 inches in diameter and 15 inches high, perforated at the bottom to prevent the floor on which it is set becoming heated. At the top is a device for suspending a plumbers' metal pot. In one side is an opening through which the burner or torch is inserted. It is claimed that the torch will hold sufficient fuel to last three or four hours, and that it will keep 10 or 12 pounds of metal in the proper liquid condition during the whole time, melting this amount of solder or lead in about 12 minutes. The torch used embodies the same principle as their Vulcan hand torch, and may be removed from the fire pot and used as a torch when desired. An opening is also provided for heating the solder coppers.

A LITTLE PAMPHLET is issued by the Star Coupler Company, St. Louis, Mo., giving a number of testimonial letters from prominent users in favor of the Star lead pipe couplers. These testimonials, all of recent date, speak in very high terms of this device.

ALDERMAN POWERS, St. Joseph, Mo., is endeavoring to have an ordinance passed to provide for the inspection of plumbing in that city.

WILLIAM FAUST has removed his plumbing shop to George Neilson's old stand, under Gilroy's clothing store, Pittston, Pa.

THE plumbing firm of Bohlman & Place, Burbank street, Pittsfield, Mass., have been dissolved, and Mr. Place is to take a position as superintendent for Mr. Bohlman, who will continue the business.

WILLIAM MAUS, Butte City, Mon., has decided to open up a plumbing establishment for himself.

WM. R. DODGE has bought out the plumbing business of T. F. McCormick, 6 Mill street, Newport, R. I., and has engaged Mr. McCormick as an assistant.

MAYOR KINGSLEY, Rome, N. Y., filed the appointment of Fred. S. Russ as a member of the Board of Plumbers in the place of John P. Cook, resigned.

THE MANKATO PLUMBING COMPANY, have been organized at Mankato, Minn., and bought out Sullivan & Co. The new firm comprise the members of the old firm and some new blood. Ed. I. P. Staede was elected manager of the new company.

GEORGE BADLEY of Tama, Iowa, and R. M. Rochford of Toledo, Iowa, have formed a partnership in the plumbing business. They will continue to have shops in each town.

THE following plumbing establishments have been recently established in Chicago: Jas. H. Mullen, 368 East Sixty-third street; Condon Bros., 47 Canalport avenue; S. C. McGraw, 2393 116th street; William J. Dermody, 480 Ogden

avenue; James McCarthy & Co., Palace Hotel, Windsor Park; A. J. Fisher, 1036 Irving Park boulevard; Walker & Williams, 4219 State street; J. G. Schriener, 556 Sacramento avenue; Jacob A. Spies, 729 Southport avenue.

THOMAS F. BURNS has opened a plumbing, steam and gas fitting shop at Norwich, Conn., and is a new candidate for trade literature.

D. R. KENNEDY, Ware, Mass., has gone into the plumbing and roofing business on his own account and has opened a shop in the basement under Barnes & Packard's market.

HERBERT M. SAUNDERS, Rochester, N. Y., has been appointed a member of the Examining Board of Plumbing, in place of Louis F. Zimmer, who recently resigned from the position.

THE PLUMBING BOARD of Rome, N. Y., has elected C. H. Jackson president and F. M. Shelley clerk. The members of the board receive \$60 each per year and the clerk \$100.

WILLIAM H. CURTIN, formerly with the James W. Birkett Mfg. Company, has started in business for himself in

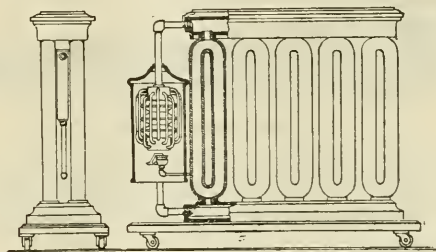
tember which should receive attention from our manufacturers. The city of Paris will shortly reconstruct its entire sanitary system. New drains are to be put in on 900 streets, and owners of houses will be required to make connections in the most approved modern methods. The exhibition is to be held for the purpose of educating the people on this important subject.

THE GRAND JUNCTION PLUMBING COMPANY, composed of S. F. Goss, G. D. Hawkins and J. L. Hawkins, Jr., have engaged in business at Grand Junction, Col.

HINCKLEY BROS. & WEEKS have moved their tin and plumbing shop to the basement of the Smith Block, Barre, Mass., and in the first floor of the building they will place for sale a large assortment of stoves, ranges and tinware.

The Portable Radiator.

The illustration herewith shows the portable radiator made by the Illinois Safety Heater Company, St. Charles,



The Portable Radiator.

plumbing, steam and hot water fitting and supplies at 161 Flatbush avenue, Brooklyn, N. Y.

THOMAS W. MULLIGAN and MELVIN M. HYATT have entered into a partnership under the firm name of T. W. Mulligan & Co., to carry on a general business as plumbers, steam and gas fitters. Their shop and warehouses are located at 8 Hodge Opera House, Lockport, N. Y.

THE SENTIMENT of Chicago journeymen plumbers appears to be opposed to the admission of apprentices to shops in which they are employed. In this sentiment the juniors or helpers join. It is very probable that the workmen's organizations will adopt resolutions that the ranks of the journeymen shall be recruited solely from the junior plumbers.

S. E. YOUNG, who has for 23 years been connected with E. Baggot of Chicago, will sever his connection about the middle of May to assume the management of a plumbers' supply house now being organized and which is to be started June 1. As a testimonial of the esteem with which Mr. Young is regarded by those having intimate relations with him, 13 of his fellow employees, on April 13, presented him with a valuable gold watch. The coincidence in the number and date may be taken as a happy omen of his career. Announcement will be made in due season of the name and location of the new supply house.

AN EXHIBITION of sanitary appliances is to be held in Paris from May to Sep-

Ill., which is designed to use either gas from the city supply or gasoline gas made by their generating apparatus. The device consists of a water heating apparatus with an opening at the top and bottom for connecting with any ordinary radiator. The radiator and heater is arranged on casters so as to be moved where the heat is desired and connection can be made with the gas supply in the most convenient manner.

The sensational advance in the price of mineral oil has continued during the past week. On Thursday petroleum quotations, which a month ago ruled at \$1 per barrel in the New York market, reached \$2.70 per barrel. The boom in this product has caused great excitement in the Pennsylvania and Ohio oil regions, where every available well is being worked to its fullest extent. Old wells which have been closed for years are being redrilled. The district is said to be flooded with speculators, who are snapping up all the land obtainable with the view of driving new wells and are offering fabulous royalties for good producing territory.

We have received a letter from Charles B. Howe, secretary, Fort Deposit, Md., stating that the next annual meeting of the Manual Training Teachers' Association of America will be held at the Armour Institute, Chicago, Ill., on July 16, 17 and 18 of the present year.

Hall's Improved Pipe Wrench.

The accompanying illustrations relate to an improved form of pipe

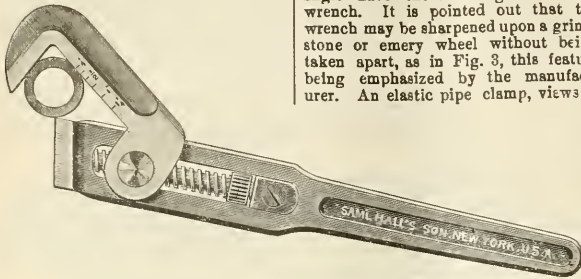


Fig. 1.—Hall's Improved Pipe Wrench.

wrench, put on the market by Samuel Hall's Son, 229 West Tenth street, New York. The wrench is described as being drop forged from crucible steel,

which are given in Figs. 4 and 5, is used in connection with the wrench for gripping very thin or highly polished brass or nickel plated pipe or tubing,

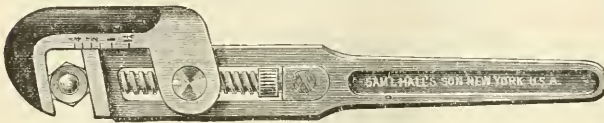


Fig. 2.—As a Screw Wrench.

having hardened upper and lower jaws, with all parts made to standard gauges and interchangeable. The jaws are smooth instead of being corrugated, to

so as not to mar or crush it. The clamp is made of cast iron, lined with an elastic rubber lining $\frac{1}{8}$ inch thick, so as to conform to any irregularity of size



Fig. 3.—Method of Sharpening.

prevent nuts or highly polished fittings being marred, and there are no springs used in its construction. It is explained that if the gripping point of the wrench,

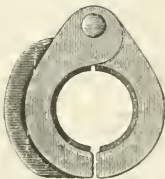


Fig. 4.—End View of Elastic Pipe Clamp.

as in Fig. 1, be placed so as to correspond with the size of the pipe as marked on the side of the hook, little, if any, further adjustment is required; also that the wrench is quickly adjusted to different sizes and to all kinds of pipe, including galvanized, which it grips quickly and firmly; that the wrench will not crush pipe; that it re-

leases instantly, and that it cannot lock on pipe. When used as a screw wrench, as shown in Fig. 2, it is stated that it will grip a nut or bolt so that it cannot slip, and that the jaws being on an angle have the advantages of an S wrench. It is pointed out that the wrench may be sharpened upon a grindstone or emery wheel without being taken apart, as in Fig. 3, this feature being emphasized by the manufacturer. An elastic pipe clamp, views of

It is remarked, for large nuts and bolts as well as for pipe work; also that the 36 inch wrench will take a nut suit-

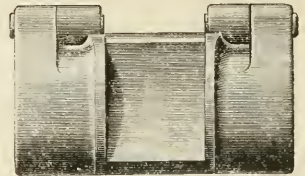


Fig. 5.—Side View of Elastic Pipe Clamp.

able for a 3 inch bolt, and the 48-inch wrench will take a nut suitable for a 4 inch bolt.

The illustrated catalogue and price-list issued by the Hanson & Van Winkle Company, Newark, N. J., with New York office at 81 Liberty street, and Chicago office at 85 and 37 So. Canal street, is a book that will be of interest and service to the increasing number of those who have to do with electro plating. The earlier pages show interior views of electro plating rooms fitted with the Hanson & Van Winkle apparatus. The introductory note to the trade is of particular interest, and gives the early history of electro plating and their connection with it. The closing paragraph reads as follows: "While it is impossible to prevent imitation of our goods or catalogues by unscrupulous competitors, we cannot help calling the attention of the trade to the lowest form of competition by which discounts and commissions which properly belong to the consumer are used to debauch employees and lead to the wasteful use of second rate material." The first electro plating machine, built by Woolrich in 1844, is shown in the earlier pages, and is an interesting relic. Then come illustrations, with particulars of the H. & V. W. dynamo and electro plating machines; also the H. & V. W. switch board or rheostat, voltmeters and ammeters following. A number of goods are listed which include all that is necessary for different sizes of plating outfits. Polishing and buffing machinery follow, a variety of lathes being illustrated, described and priced. Grinding machines come next, then polishing wheels of all sorts, polishing material, plater's supplies, including glassware, &c. The next division of the book relates to lacquers of various sorts which Hanson & Van Winkle Company furnish. Directions are given and particulars of the different sorts of lacquers as well as supplies for this work. Electric batteries are noted later; then come electric light machines, storage batteries, telephones and other forms of polishing lathes. Interesting tables are given at the end of the book, which closes with an alphabetical index.

The Canadian Trade Review says that, out of 55,000 families in Montreal, only one in five uses gas. The reason given is that the price of the illuminant is maintained at such a figure as to be practically prohibitive, except in the case of the wealthier classes.

The American Line steamship "St. Paul" was successfully launched at Cramps' shipyard, Philadelphia, on the afternoon of April 10, in the presence of a very large concourse of people.

STEAM AND HOT WATER.

The Harvard Radiator.

Herewith is an illustration of the Harvard radiator, which has just been placed upon the market by the Gurney Heater Mfg. Company, Boston, Mass. It is made for hot water or steam heating, top connections being used in both instances, in four heights, as follows: 39, 33, 27 and 21 inches. In bringing it to the attention of the trade, the manufacturers desire to state that the decoration is entirely new and of very artistic design. This radiator has been constructed with a view of allowing ample space for the circulation of air, thus insuring the greatest efficiency. The manufacturers allude to the small amount of floor space occupied, the uniform thickness of the castings, the fine quality of iron, and mention that each section is put together with a push taper nipple made of 2-inch steel pipe. The Gurney Heater Mfg. Company desire to emphasize the fact that they guarantee the amount of radiating surface to be as catalogued. The Harvard (for hot water) contains practically the same water volume as the Gurney hot water radiator, viz., 13½ gallons per 100 square feet. The manufacturers will be very glad to quote prices and furnish descriptive circular upon receipt of request.

The Proper Location of Radiators.

BY W. H. PENNELL, WASHINGTON, D. C.

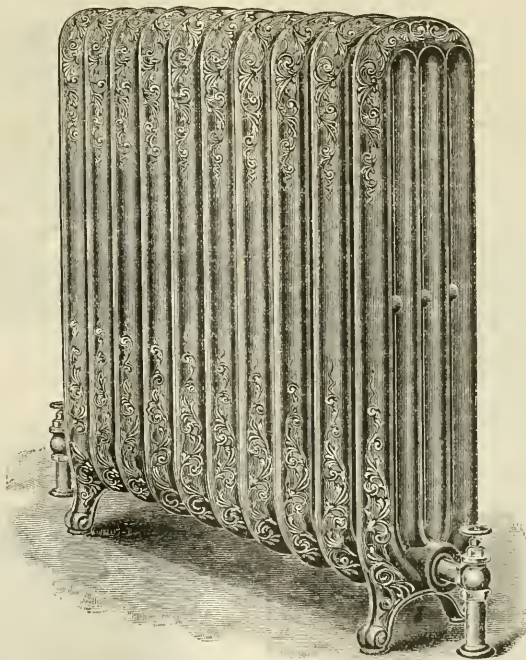
Experiments for determining the value of radiant heat began with a red hot ball suspended freely in the air. The results of these experiments determine the fact that heat travels in straight lines, but that the effects of radiant heat are more noticeable above than in any other direction. This we recognize as "of course," without, perhaps, recognizing the fact that it is the currents of heated air rising, because heated, that makes the result noticeable. Experiments show that heat rays may pass through air without heating it, as the heat rays of the sun pass through our atmosphere. This has led some to contend that pure dry air is transparent to heat. This may or may not be so, but our experiments with heating houses must take into account the convection of heat by the air or the impurities in the air, for by some medium we must convey heat to every portion of a room from the place where we locate our radiator. The radiator may be a stove, a glowing grate, red hot ball or a reservoir filled with steam or hot water.

A stove throws out or radiates heat laterally as well as upward, so that the room seems to be heated from the heat rays thus sent off, for these rays are so strong that they quite take away the idea of the air becoming heated and the room being heated by the circulation of the air. When the air absorbs heat—becomes heated—it expands and rises very rapidly. The cause of the upward rush of the air being the heat absorbed, it is evident that the air will continue to rise as long as the amount of heat is constant. The heat from a column of

heated air is absorbed or extracted slowly by the surrounding cold air, but when a solid body is encountered the heat is very rapidly discharged. As the air loses its heat it is condensed, and becoming heavier it will fall toward the floor. The pouring of water from a vessel upon an iron plate from a considerable height will illustrate inversely the action of the air pouring out of a furnace register up through the air of a room until it strikes the ceiling.

As the water would flow away toward the lower portion of the plate so the air flows away toward the colder

Radiant heat is noticed most strongly from the stove and least from the hot water radiator. In fact, in moderate weather, when the water in the boiler is not over 100°, no radiant heat is recognized, horizontally, from a hot water radiator. The currents of air coming in contact with the heated iron seems to carry all the heat in vertical lines. Because this is so we will take the hot water radiator to determine the proper place in the room for the radiator to best heat the room. It is evident that the air of the room must be warmed, and with it the walls of the room, the



The Harvard Radiator.

wall more rapidly than in the other direction. As it flows along the ceiling, followed constantly by the renewed current, parting with its heat all the time, it seems drawn toward the colder portion more rapidly, so that if there is an exposed wall or a window the currents will be found to be most rapid in that direction. A simple experiment will determine this. Place a bit of aromatic gum, or any strong smelling tincture upon the register of a hot air furnace and notice how much more quickly you will get the odor at a window than in any other part of the room.

When the heating apparatus is in the room to be warmed, whether it be a stove, a steam radiator or hot water radiator, the air is warmed by contact with the heater.

furniture and all solid matter of whatever nature in the room, all to an equable temperature. What this temperature will be must be determined by the size of the radiator and temperature of the water. That is, proportion of heating surface to cubic contents plus temperature of water in radiator.

The moment the water is heated the air in contact will rise at once from every part of the heating surface, being supplied from below by the colder air flowing in to take the place of that sent up toward the ceiling. The upward stream being constant the flow toward the radiator must be equally constant, and the current toward the radiator will be the colder air, that near the floor the coldest, so that the very coldest place in the room will be at the floor near the radiator.

We have seen that the air rises constantly to the ceiling, flows along the ceiling, parting with a portion of its heat down the walls to supply the current that is all the time flowing toward the radiator, parting with the heat by contact with the walls, falling the more rapidly the more it is cooled, and most rapidly down the colder walls. Glass is transparent to heat, and so down past the windows the current flows most rapidly, but as the current is drawn most strongly toward the window a larger portion of the heated air is drawn in that direction, and therefore a larger quantity of heat will be carried to the floor, where, parting with still another portion of heat, the air will flow toward the radiator, to be again heated and sent into circulation. This should make the floor near the window the warm place, if the radiator is placed where it should be, upon the opposite side from the window. A careful study of the subject will convince one that the proper place for a radiator in a room is not under a window. No one would think of placing a stove in a bay window "to make it comfortable to sit in," and yet we find some who will place radiators where they would not put a stove. I have seen radiators set into a recess, with a screen in front under a window cutting off all circulation of air.

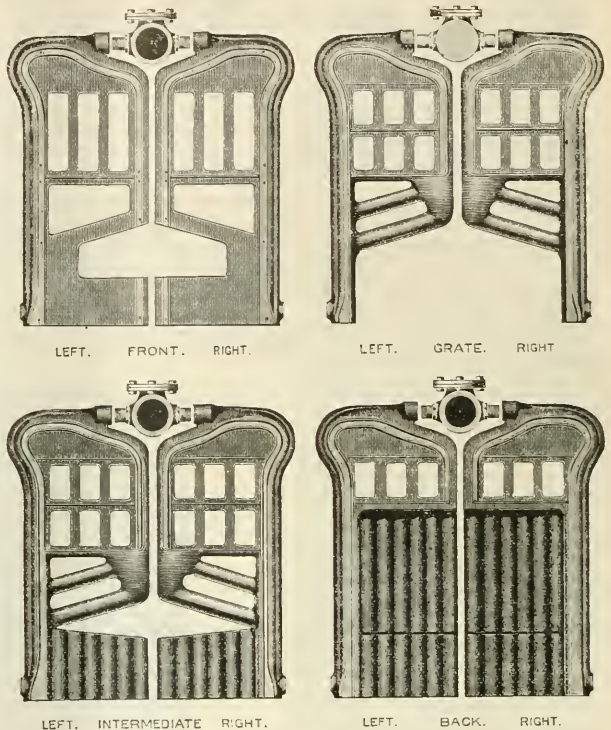
Radiators improperly set are costly fixtures, since they use up fuel without giving an equivalent. When all the conditions are observed there is no system so economical as hot water heating; but it is more essential with this that the radiator should be properly located. We are told that one can feel the cold near a window. Our bodies become radiators when we are near a colder body, and we feel the loss of heat abstracted by the window. If the room is sufficiently heated, so that the current down the window will bring with it a surplus of heated air, this loss of heat from our bodies will not be perceptible. This whole matter is easily decided by experiment, and an unprejudiced examination will show that these conclusions are correct.

Richmond No. 336 Sectional Heater.

We present herewith illustrations of a new steam and hot water heater recently patented by W. C. Higgins of Norwich, Conn., which the Richmond Stove Company are about to offer in the market. It will be known as "Richmond No. 336 Sectional Heater." While the boiler has many features similar to those of present constructions made by this company, it will have also entirely new ones, which, they say, will appear for the first time in sectional boilers, and it is claimed will mark an advance forward in this type. Among these features will be the form of the leg, affording a natural channel for the return water in a steam boiler; the large direct fire surface within the combustion chamber, and therefore exposed to the direct action of the fire; the double return flues of large areas, permitting the products of combustion to pass through the boiler to their exit in the chimney in combined form, and thus performing their full service; the extended dome, or steam chamber of the sections, at the water line of a steam boiler, thereby increasing the liberating surface for steam and securing a more steady water line. The base or ash pit is built of brick, having an 8 inch wall surmounted by a 4 inch, on which will rest the bed plate to re-

ceive the sections as they shall be mounted in their places. Provision will be made for an ash pit of 16 inches deep, which may be increased to

seen that they are made in halves. This will facilitate the handling of the parts in assembling them, on account of what otherwise would have been



Richmond No. 336 Sectional Heater.—Fig. 1.—Different Sections of the Heater.

meet the further requirements of the contractor. The grates are single bars of triangular form, which experience, it

their cumbersomeness and weight. The illustration affords suggestions of the mounting of the boiler, showing the

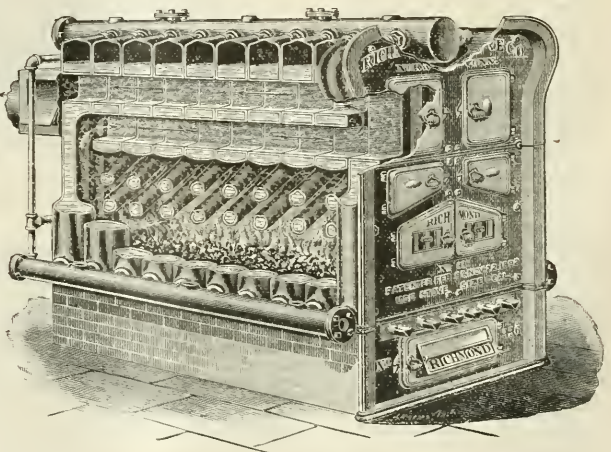


Fig. 2.—Sectional View of Ten-Section Heater.

is said, has demonstrated to be most durable and economical in use. Fig. 1 represents the different sections forming the complete heater. It will be

connections at the top of the two halves with the flow drum, which, with the two return drums, will bring the different sections into union as a complete

boiler. These connections will be made with 2-inch extra heavy wrought iron nipples, with lock nut joints. Fig. 2 is a sectional view of a ten-section heater and shows the fire surfaces within the combustion chamber, as

thus pass regularly and evenly over the shell of the boiler until drawn into the smoke flue. The deflecting shields are movable by means of a lever extending to the outside of the casing, a movement of which lever creates a

is said to increase the rapidity of circulation from 25 to 35 per cent. It is also said that the taking of the water from the boiler from the coldest point,

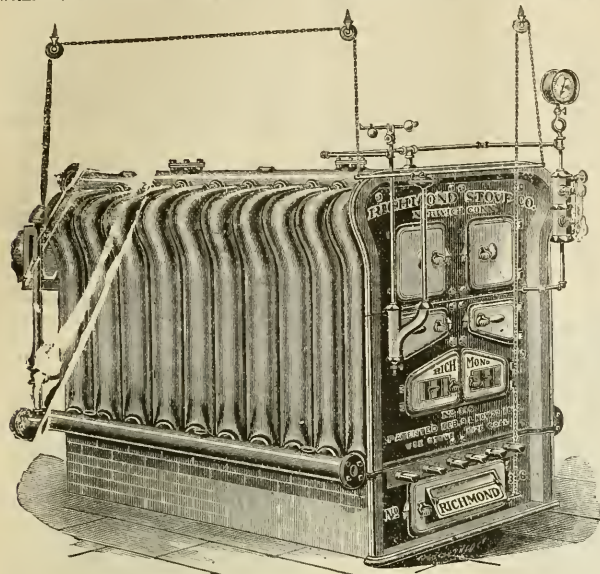


Fig. 3.—General View of Heater.

well as the order and direction of its flues.

Fig. 3 represents the complete steam boiler. It is claimed that the Richmond will be equally well adapted for hot water. The function of the two—i. e., steam and hot water heaters—in relation to their connecting systems and uses, is the same—that is, to heat the water. The No. 336 Richmond is intended for large work, having a fire pot 36 inches wide and from 41 to 55 inches long, according to the number of its sections. It will be made in five sizes, having grate surfaces from 1476 to 1980 square inches. Its claimed capacities for steam will be from 2100 to 3000 square feet of direct radiation, and for hot water from 3500 to 5500 square feet.

The Lindemuth New Sun Steam and Hot Water Heaters.

Broomell, Schmidt & Co., Ycrk, Pa., are putting on the market the New Sun steam and hot water heaters shown in the accompanying illustrations. As will be seen in Figs. 1 and 2 the heaters are of the vertical type. They are described as being constructed throughout of selected steel or iron plates, and the surfaces are divided in a manner calculated to give the best results. The division of the water spaces by heating surfaces in the fire and drop tubes is intended to effect positive circulation in all parts of the boiler. There is a combustion chamber above the fire box, affording ample space for the mixture of the gases and their combustion. The hot gases, after leaving the combustion chamber, pass around the drop tubes up the fire tubes, whence they are carried into a chamber where they are divided by deflecting shields meeting angle iron plates, and

direct or indirect draft, as may be required. The base is provided with an ash pit door of suitable size, to which is fitted a draft door. An anti-clinking opening covered with a mica door is situated above the ash pit door. The grate is of an improved anti-clinking rocking pattern, close enough to allow of the use of fine coal, and yet allowing sufficient space for the passage of air. The base is fitted with clean outs for the removal of soot or dirt collecting between the casing and the boiler proper.

The drop tubes are made of strong 2-inch pipe, securely welded at the



The Lindemuth New Sun Steam and Hot Water Heaters.—Fig. 1.—Broken View of Hot Water Heater.

bottom end and having on the inner part an insertion of 1/4-inch pipe set with cast iron projections and dividers. These tubes are designed to hang immediately over the fire and thus add to the efficiency of the circulation. The water is discharged immediately under the outtake of the hot water system, and

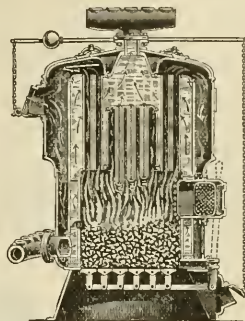


Fig. 2.—Section Through Hot Water Heater.

an objection heretofore encountered, is entirely obviated. The heaters are, however, when required, supplied without drop tubes.

Fig. 3 shows the position of the fire tubes and drop tubes. The under dome, as previously described, is divided by partitions which divert the products of combustion and turn them over the outside of the heater. This, it is claimed,

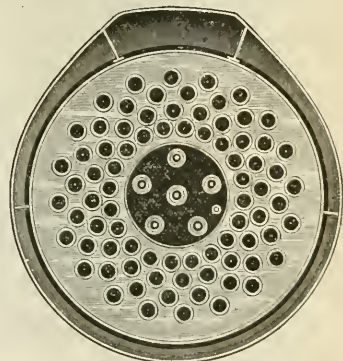


Fig. 3.—Section Showing Fire Tubes and Drop Tubes.

prevents the outer casing, or top of heater, from becoming overheated and radiating the heat. In the top of both inner and outer domes are placed hand hole plates to admit of cleaning or inspection of the tubes. The heater is incased in a heavy galvanized casing lined with a heavy sheet of asbestos in order to prevent radiation, and is supplied with an improved automatic damper regulator, draft door, draft check and damper, and all the usual fittings.

The steam boiler, in construction, is similar to the hot water heater. The boiler is said to contain sufficient water to fill the system with steam without necessitating filling until the water of condensation returns. The heating surfaces are described as being ample, and it is stated that steam is quickly raised and maintained with a small amount of fuel. It is claimed that the steam space is large and that the manner of taking steam out of the boiler through the funnel outtake prevents siphonage of the water under any circumstances.

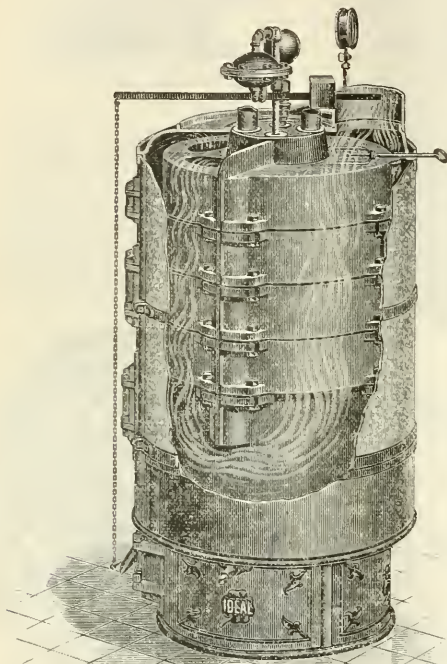
Ideal Steam Boiler.

The Ideal Boiler Company, 36 Dearborn street, Chicago, herewith illustrate their steam boiler, which was put upon the market late last season, and so satisfactory was its performance during the severe weather which was experienced in all parts of the country during the winter of 1894 and 1895 that the manufacturers are claiming for it some strong features of superiority. Fig. 1 shows the boiler with casing partly removed and Fig. 2 shows a broken view of boiler. Many of the distinguishing features of the Ideal hot water heater are retained in the construction of their steam boiler. It is claimed that no feature of these boilers has at

manufacturers lay great stress. The Ideal steam boiler is arranged for direct draft through the sections and through the steam dome to the chimney; for indirect draft, by means of a damper, the products of combustion are diverted down the front side of the boiler, between the jacket and the sections, returning the same way up the back side of the boiler to the chimney. Every portion of the boiler is easily accessible for the purpose of cleaning. The aim of the manufacturers is to introduce as few parts as possible, and their boilers are so simple in construction that they are easily set up by those most inexperienced in the business. The capacities of the various sizes have been determined with great

is followed by cuts showing the construction and operation of the Andrus heater. The feature of the catalogue is in the bringing out of four new sizes of the heater, two of which are smaller than have been made heretofore and two of which are larger. They are rated to carry respectively 300, 375, 1600 and 1850 square feet of radiating surface. The heater is made in ten different sizes, and in capacity is adapted for large and small work. The last portion of the book is devoted to testimonials of the superior operation of the Andrus heater during the past winter.

THE BLACKMORE HEATING SUPPLY COMPANY are a new house at 101 Beekman street, New York, in the new Beekman building. They will have the Eastern agency for the line of Triumph hot air furnaces and combination heaters made by the Craig-Reynolds Foundry Company, Dayton, O., and for the Ormate radiators made by the United States Radiator Company,



Ideal Steam Boiler—Fig. 1.—Boiler with Casing Partly Removed.

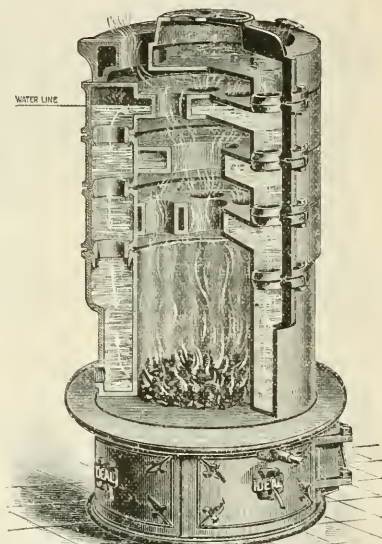


Fig. 2.—Broken View of Boiler.

tracted so much attention or has tended to so enhance their popularity as the Push Nipple Joint which is used to connect the sections, and which, it is maintained, will last as long as the house in which the apparatus is erected will stand. The greatest care is exercised in reaming the sections and in grinding the nipples. All of the parts of the different sizes of heaters are made absolutely interchangeable, affording to the steam fitter the greatest facility in setting them up. Not a little difficulty is experienced with various kinds of house heating boilers for steam in maintaining a steady water line, and to overcome this there is introduced at the back of the boiler, as shown in Figs. 1 and 2, a large water way connecting the sections in which the water line is carried with the fire pot, but this water has no connection with the intermediate sections. This device secures a perfect circulation within the boiler itself and is a feature of excellence upon which the

care and with proper regard for their relations to the actual and effective fire surface in each. It is claimed that they are underrated rather than overrated, according to the accepted standards.

HEATING NOTES.

THE WILLIAMS HEATING COMPANY are a new house at 83 John street, New York, which will continue the business of constructing heating plants formerly carried on by the Blackmore Heating Company.

ABENDROTH BROS., 109-111 Beekman street, New York, are issuing a 20-page catalogue of the Andrus water heater in a maroon leatherette cover with their address on the front cover in gilt and their trade-mark in gilt on the back cover. In the introduction to the catalogue they point out the advantages of hot water as a means of heating. This

Salisbury, Pa. They handle a number of specialties of interest to the heating trades. L. R. Blackmore has recently returned from a trip in New England in the interest of the house.

W. S. NEWKIRK, well known in the steam and hot water heating trade, having been for many years with Eaton, Cole & Burnham and later with the A. A. Griffing Iron Company, has opened a New York office at 110 Beekman street for the United States Heater Company of Detroit, Mich., where he is advancing the interests of the Capitol, Hecla and Mascot heaters.

THE NEW YORK CENTRAL IRON WORKS, Geneva, N. Y., report that they are doing an excellent business and evidence of it is shown in some of the large shipments recently made of their famous Dunning boilers. One lot of 11 steam heating boilers was packed in a freight car to be sent to Helena, Mont., while a second shipment at the

same time was made to Washington. Two large individual contracts almost completed are a 100 horse-power boiler for the Seneca Woolen Mills and a 40 horse power boiler for Sigler & Co. of Geneva.

THE latest postal traveler of the United States Heater Company, Detroit, carries the announcement, "We sell radiators." Then it goes on to say what the special merits of these radiators are. Other goods that they sell are valves, expansion tanks, &c. The trade, of course, knows that they sell the Capitol, Hecla and Mascot heaters—that goes without saying.

SMITH & WINCHESTER, Boston, Mass., are making preparations to remove their New York office from 174 Fulton street to the Cornell Building, at 141 Centre street, May 1. Secretary N. E. Frost will look after the interests of their specialties in plumbers' supplies, and also the Winchester boiler, which he will be glad to show to visitors from the heating trade.

NEWELL P. ANDRUS of Abendroth Bros., New York, was a visitor at *The Metal Worker* office this week previous to his departure for Boston, where he will visit the heating trade in the interest of the Andrus water heater.

D. W. RICHARDS, Bedford, Pa., intends to add steam and hot water heating to his business, and would be glad to receive catalogues or other printed matter from the heating trade. He also informs us that he would like to get the agency for a good line of heaters.

A. T. HENDERSON of the United States Heater Company, Detroit, Mich., was in New York during the past week visiting the trade in company with W. S. Newkirk, who was recently appointed New York agent of the United States Heater Company.

A LETTER from the W. H. Page Boiler Company announces the opening of a New York office for the sale of the All Right, Volunteer and Page sectional boilers for steam and hot water heating at 61 Gold street, under the management of Alexander Don.

TOULMIN BOILER COMPANY are opening an office at 141 Centre street, New York, and have placed one of their Toulmin sectional boilers at one side of the entrance.

D. R. McCALUM, manager of the New York office at 69 Centre street of the J. H. McLain Company of Canton, Ohio, is making a trip among the heating trade and will stop at Baltimore and Washington in his itinerary in the interest of the Humber and Cambridge steam and hot water heaters and the general line of heating goods made by the company. He is distributing among the trade a new 32-page price-list which gives the capacity for radiation and full particulars with reference to the heating apparatus made by the company. We notice on pages 10 and 12 cuts of the Cornell steam and Princeton hot water heaters, new apparatus of the vertical section type, and on page 16 the Rugby steam heater, which is of the single dome direct draft type. The last pages of the book are devoted to radiator valves, expansion tanks, thermometers and steam fitting supplies. Geo. Plastow is in charge of the office in his absence.

IT IS EXPECTED that Treasurer Judson A. Goodrich of the American Radiator Company, 92 Centre street, New York, will sail from the Bermudas, where he

has been taking a vacation, in time to reach New York next week.

A. H. FOWLER of the Fowler Radiator Company, Norristown, Pa., spent a few days in New York this week talking about the Fowler direct and indirect Radiators.

W. C. HIGGINS of the Richmond Store Company, Norwich, Conn., visited Albert A. Oryer & Co., 85 Centre street, New York, in the interest of their line of steam and hot water apparatus.

MR SULLIVAN of the firm of Sullivan & Kennedy, heating contractors, of Holyoke, Mass., visited the heating trade in New York this week.

W. A. RUSSELL, 89 Centre street, New York, is displaying samples of the Novelty steam generator and the Novelty hot water circulator in the interest of the Model Heating Company, Philadelphia. They are finished in white with the lettering gilded, the galvanized iron jacket being coated with silver bronze. He is also displaying on a sample board a line of engine lubricators and oil cups, made by the Detroit Lubricator Company, Detroit, Mich., whose line of steam and hot water valves he is pushing.

WALTER PENDLETON, manager of the New York office, at 89 Centre street, of the Niagara Radiator Company, Buffalo, N. Y., is showing photographs of the new Niagara direct indirect radiator. Mr. Pendleton has recently returned from a trip to Boston in the interest of the company. He has just secured a storehouse at 56 Franklin street, New York, where he will have capacity to store eight carloads of radiators, and it is the intention of the company to carry a stock at this place in order to fill orders promptly.

THE CATALOGUE that the Smith & Winchester Company of Boston, Mass., are sending to the trade in the interests of the Winchester boiler of their manufacture is an exceptionally pretty example of pamphlet making. The outside cover is designed with great taste and is neither overornamented nor too plain to be inconspicuous. The pamphlet is held together by a silk cord at the back. It begins with an address to the public and the trade, in which they give briefly the history of the Winchester boiler and why it was brought out. Then follows a straightway description of this well-known apparatus, with various views of the boiler. It is not made too elaborate, but the principal points merely are covered. The table of contents follows and then the telegraphic code. Next a few pages are given up to various radiators, illustrated by half-tone engravings, and then comes the reference portion of the publication. It consists of some 30 odd pages, the title of which is "From our Friends," and gives letters from all people in all places, and all in favor of the Winchester heater. The pretty feature of the pamphlet are the head lines, cross heads and other prominent words printed in red ink.

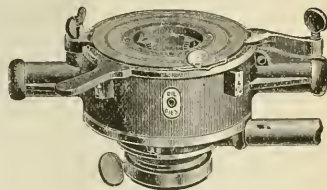
ELIAS BERLA, 88 Mulberry street, Newark, N. J., has recently enlarged his construction shop, and has placed a boiler to run his machine tools, the latest addition to his plant being a machine to cut pipe up to 12 inches in diameter. He also has a machine of an improved type for cutting pipe of smaller sizes. He is now preparing to cut pipe from specification at short notice. Mr. Berla is using 8000 feet of

Niagara radiators in a row of houses where he is installing the heating plant.

A RISE IN RADIATORS is seldom pleasing to the heating trade, but the elevation of the Royal Union, Champion Union, Union and Reed radiators on a platform in the showrooms of the H. B. Smith Company, 133 Centre street, New York, adds to their attractiveness.

The Oster Adjustable Ratchet Die Stock.

The Oster tool, which is herewith illustrated, has just been brought out by the Oster Mfg. Company of Cleveland, Ohio, who have applied for a patent on it. The adjustable principle is the same as that in use in the company's die stocks, which are well known. The new tool is intended for plumbers and steam fitters, pump fitters and other mechanics who have any occasion to thread pipes. It is arranged for use with two handles released from ratchet gear or with one handle as a ratchet tool. This enables it to be used as the regular shop tool and also out of the shop for work in ditches and close corners where there is but little room



Adjustable Ratchet Die Stock.

to operate the handles. A simple but effective device enables it to be adapted to cutting either a right or left hand thread. It is fitted with a leader screw to start the thread so that it can be operated satisfactorily by an unskilled workman. A positive stop enables the operator to thread any number of pieces of one size without resetting. There are no pockets in which chips or dirt can accumulate to clog the tool or retard the work. Pipe can be threaded and cut off without changing the tool. The dies and cut off blade can be easily and quickly removed and sharpened on a grindstone. Oil holes are provided to admit oil to the cutting edge of the dies and cut off blades. Three sizes of this tool are made. No. 7 weighs 22 pounds and will cover 1 to 2 inches; No. 8, 60 pounds, 2½ to 4 inches; No. 9, 80 pounds, 4½ to 6 inches.

The latest application of aluminum, which is reported from England, is one of the most extraordinary to which this versatile metal has yet been put. It is no less than the formation of an artificial ear for a man who had lost one of these organs through disease. An artificial ear was built up in wax, similar to the natural ear on the opposite side. It was then made in aluminum and tinted and enameled to harmonize with the complexion. To support the aluminum ear adhesion was effected by means of a saturated solution of gum mastic in absolute alcohol. The man was thus accommodated at the Queen's Hospital, at Birmingham, and the doctors there report that he can now hear as well as ever.

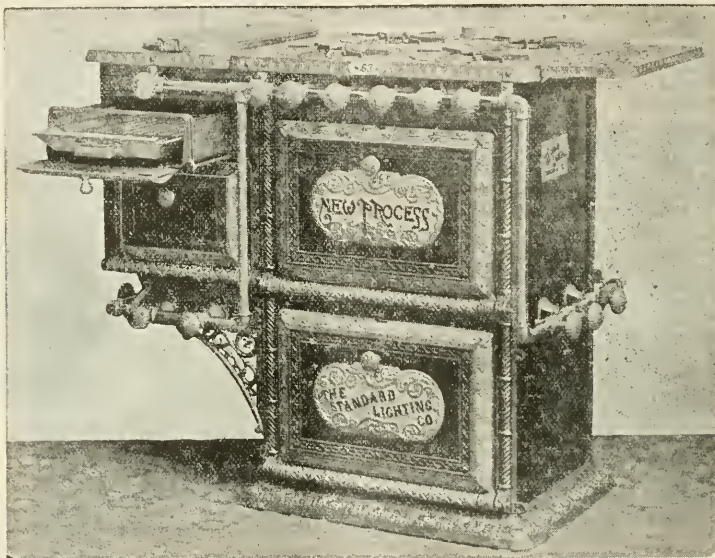
THE RETAIL STORE.

The New Process Gas Range.

The Standard Lighting Company, Cleveland, Ohio, are entering into the gas stove business with the same vigor which has characterized their operations in the manufacture of vapor stoves. An illustration is herewith presented of their new range, which is

ing made of a single plate cast with a continuous chamber without joints, avoiding possibility of leaks and more efficiently utilizing the heat. This water back is claimed to use but half the gas ordinarily burned in heating water, and this claim is supported by the statement that no cooking can be done over the water heater. Only enough heat es-

so as to allow the machine to be easily cleaned. The point is made that clothes in the machine are washed between suspended slats, which cross each other diagonally in opposite directions, and that the slats are placed at such a distance apart and present their corners to the clothes in such a manner as to cause the clothes to be rubbed together



New Process Gas Range.

shown in but one of several forms that have been designed to meet the requirements of the most exacting consumers. This range, in the first place, is dressed most attractively. Care has been taken to make it conform to the most modern ideas of daintiness in cooking apparatus. It is furnished with a cast top, cast oven racks, balance drop doors, jet lighter for oven and water-back burners, simmering burner, giant burner, flue connections, removable oven linings, adjustable air mixers and a number of special features. Prominent among these is the adoption of terne plate for the linings of doors, linings of ovens, drip pan, &c. Terne plate, being non-corrosive, forms a vastly superior lining to black plate, and is presented as having the preference over galvanized iron for these uses.

Another feature is the chop broiler on the side of the range. It is made with a sliding case or jacket which draws out with the pan, for which it acts as a support or table. The cut shows this sliding case partly drawn out. The burner for this broiler being above, it is utilized for another purpose. Tilting dampers over the burners permit the heat to pass upward and be used for heating a griddle to bake cakes when the broiler is not being operated. The water back is of new construction, be-

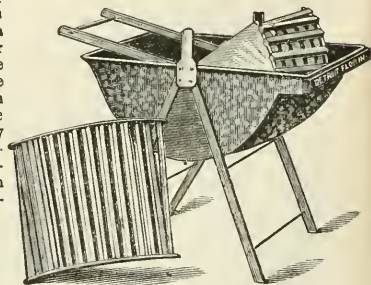
comes to moderately heat a warming oven.

The oven used is the company's Reflex, with side flues, which, in its application to gas stoves, is a decided departure. It bakes evenly on top and bottom without burning. Indicators are placed on the oven valves so that a glance tells whether they are open or closed, avoiding the necessity of the operator kneeling on the floor to see whether the burners are lit or how high the flame may be. The pilot lights are provided with air mixers so that they burn with a blue flame and do not deposit soot. The company have just issued a very complete catalogue in which this and other constructions are fully illustrated and described.

The Detroit Florin Washer.

Detroit Galvanizing & Sheet Metal Works, Detroit, Mich., are manufacturing the washing machine here shown. The tub of the washer is made of galvanized sheet iron to prevent it warping, splitting or leaking, and to be free from odor, also to make it light enough to allow the washer to be carried in and out of the house. The lower slats, which are shown outside the washer, are suspended in the tub so as to leave a water space below, and are removable

upon themselves. This, it is explained, is the true method of washing, and does not injure the clothes, because the slatting does not rub upon them. The



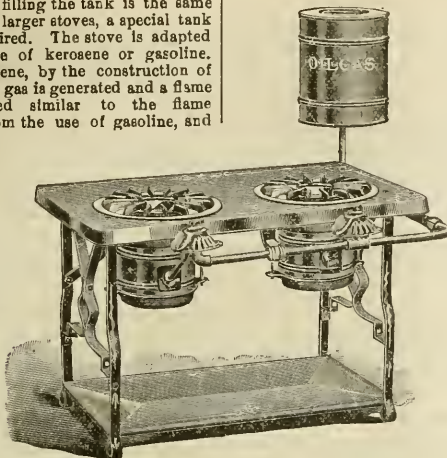
The Detroit Florin Washer.

manufacturers claim that the machine will wash everything from a rag carpet to a lace curtain; that it cannot tear or injure the finest goods; that it will clean everything without rubbing by hand, and that if rightly used it will run so easily that a child can operate it.

Oilgas Vaporizing Junior Cook Stove.

The Central Oilgas Stove Company are showing at their salesrooms in Boston, New York, Chicago and San Francisco, the Junior type of their oilgas vaporizing cook stoves, a picture of which is given herewith. The Junior style is made with one, two and three burners. The method of filling the tank is the same as in their larger stoves, a special tank being required. The stove is adapted for the use of kerosene or gasoline. With kerosene, by the construction of the burner, gas is generated and a flame is furnished similar to the flame secured from the use of gasoline, and

finished, and fitted with bronzed pulls. The manufacturer states that the boxes are not only light, strong, neat, attractive and labor saving, but that they are sold at a price which is small compared with the real value in the store; also that they were invented by a Hardware merchant thoroughly familiar with the requirements of the trade. The boxes



Oilgas Vaporizing Junior Cook Stove.

it is said of much greater heating power than can ordinarily be secured from the use of kerosene as a fuel. All their stoves are furnished this year with a graduated valve by which the heat and consumption of the burner can be regulated. Simple directions are furnished by the company for operating the stove so that success can be secured by the ordinary servant.

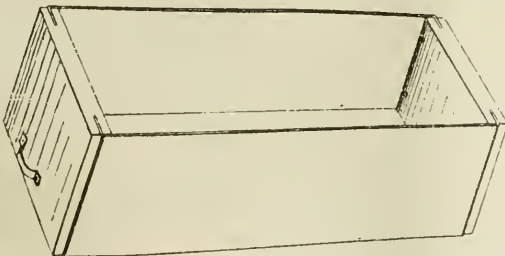
Bennett's Hardware Shelf Box.

J. S. Bennett, 332 Main street, Winnipeg, Canada, is offering to the Hardware and other trades a sample box

are patented in Canada and the United States and are protected in England. We are advised by Mr. Bennett that he is prepared to grant State rights for the manufacture and sale of these boxes, or that he would dispose of the United States patent.

MEMORANDA.

ESTEE WIRE WORKS COMPANY, 65 Fulton street, New York, with factories in Brooklyn, were incorporated March 1 last, capitalized at \$25,000. The officers are W. S. Estey, president; C. P. McGuire, vice-president, and W. O. Chapman, secretary. This concern was formerly W. S. Estey, the



Bennett's Hardware Shelf Box.

or drawer for shelf use, as here shown. The bottom and sides of the box are made of bright sheet iron or tin and the ends of wood, in which the metal is embedded. The point is made that there are no nail heads or any roughness on the boxes, that they are smooth to handle and that they slide on the shelves side by side without any trouble. The fronts and backs of the boxes are made of pine, enameled any color desired, or of hard wood, oil

business having been begun in 1876. They manufacture Wire Cloth of brass, copper, iron, galvanized and steel wire of all meshes and grades for mining, milling and other purposes, including locomotive spark Wire Cloth. Also Wire Work for bank, office and counter railing, store fronts, window guards, &c. In addition to the above they make Wire Cloth for windows, skylights, refineries, centrifugal machines, Sand and Coal Screens, Riddles for ex-

port and foundry use. Netting for henneries, Trellises, Bolting Cloths, Sifters and Rat Traps.

MALTBY, HENLEY & Co., 20 Warren street, New York, have renovated the interior of their office and salesroom floor. A new embossed steel ceiling, painted a delicate tint, has been put in and the side walls painted to correspond. This concern are large producers of Silver Plated Ware, Revolvers and various kinds of House Furnishing Goods, together with Shears, Scissors, Tin Spoons, &c.

BRIDGEPORT BRASS COMPANY, 19 Murray street, New York, have just placed in position a fine new natural oak sample case, with four sliding plate glass fronts. In it are sampled their new Rochester Lamps in the various styles, patterns, sizes and finishes, a full stock of which is now ready for the trade. These Lamps include stand, parlor and banquet patterns, founts and oil pots in brass, finished in silver plate, nickel, bright gold, oxidized silver, gilt, oxidized copper or plain brass. Some of them are embossed with watch dies and present a very attractive appearance, while others have cast bases, founts, &c. All the latest improvements are incorporated in this Lamp, as described in detail recently in these columns. To give an adequate idea of their work at Bridgeport, Conn., they have gotten out a large photograph, which is mounted in an antique oak frame, ready for hanging, 26 x 33 inches, lined with a narrow gilt molding and fitted with glass front. This is entitled "Home of the New Rochester Lamp, Bridgeport Brass Company."

HOFF & RAYMOND, Middletown, Pa., are opening a new general Hardware store in that place. They will conduct a wholesale and retail business. They advise us that they would be pleased to receive from the trade catalogues and spot cash prices on goods in their line.

ADDISON HARRIS, formerly of Moundsville, W. Va., has just opened a hardware store at Turtle Creek, Pa.

C. E. JENNINGS & Co., 79 Reade street, New York, have been appointed the sole agents for Chandler's ice cutting machine. This machine is designed for cutting ice into small diamond shaped pieces, and is said to occupy a space but 8 inches square. It is adapted for use with soda water fountains, while the larger sizes can be used for preparing ice for making ice cream.

J. G. BAILEY, Graham, Va., has sold out his stock of hardware, pumps and woodenware, &c., to A. H. Beall.

The director of the United States Mint has issued a preliminary calculation of gold production for the calendar year 1894, which places it at \$170,000,000 for the entire world, and \$43,000,000 for the United States. The official figures are not yet completed because of some discrepancy between the reports received, but they are believed to represent pretty closely the actual figures. A production of \$43,000,000 in this country will be an increase of about \$7,000,000 over the production of 1893; while the figures for the world will exceed the world's production of 1893 by about \$12,000,000. The larger part of the increase is due to the mines of the Witwatersrand region of South Africa, which are believed to have put out about \$10,000,000 more than the previous year.

ROOFING AND CORNICE.

Sheet Metal Ceilings.

BY DROP PRESS.

Sitting in a recently opened restaurant, the other day, where all of the fittings were of the handsomest character, my notice was directed to the ceiling by the remark of another guest who called the attention of his companion to the ceiling, saying that it was said to be made of steel.

Some argument resulted, as one claimed that if it was made of steel a joint would be made where the sheets were lapped, which could be readily seen. The proprietor was called upon to vindicate the assertion which had been made. He stated that it was steel and that he found that that character of ceiling was not only being used in public buildings but also in private houses. He was asked where the line was between the sheets. He stated that, although he was present when the ceiling was put up and knew that there were laps in it, he could not point them out now. I have seen sheet metal ceilings put up and know the process of manufacture and I was unable to find the joints between the sheets, although there was considerable plain surface in the design, which was of the high relief order.

This caused me to call on some of my friends in this line, and I find that their plants have been very much enlarged, due entirely to the demand for this character of ceiling. The trade seems to be somewhat divided. One class may be termed of the gaudy and striking character, and is largely used in saloons, barrooms, restaurants and buildings of that character. Another class is used in churches, halls and public buildings, some effects which are truly beautiful being gained in church work, where the ceiling panels are of one design with an appropriate frieze or border and the side walls partly down are covered with panels. While I was talking in one shop a gentleman called who stated that he had had another ceiling fall in his house, and only just after the occupants of the bed had risen. He now wanted a steel ceiling put up in this chamber and also in his dining room, as the ceiling there gave promise of demolishing his china if not removed at an early date. He stated that he desired the same design used in his dining room as had been used in his parlor. After his departure I asked if there were no objections raised against this ceiling for residences, and if some had not claimed that it had a sheet metal or cheap tin appearance. This brought me in contact with the order book, where numerous orders for sheet metal ceilings for various rooms in residences were recorded; and I was shown how, by good workmanship, the joints could be so made between the sheets that they were difficult to discern, and when properly painted could be entirely covered.

It is claimed that this character of work is increasing in demand through sheer force of merit. Some excellent artists are designing panels and decorating them when in place. One of the advantages of a sheet metal ceiling,

which has been demonstrated clearly, is its fire proof qualities. In a large retail house a fire occurred which smoked the ceiling, and as considerable water was thrown into the upper story the ceiling was deluged, and had it been of plaster would have had to be entirely replaced, although the fire was not otherwise destructive in extent. As a result of the steel ceiling not only were the goods under it prevented from being soaked with water, but the ceiling itself, after it had been dried out and freshly painted, at a very small cost, left no traces of the disaster. In another case a fire occurred in a business building on the floor above a show room where perishable and valuable goods were displayed. Through the efficiency of the steel ceiling no damage was done to the goods.

Sliding Roof for a Theater.

Among the latest uses to which electricity has been put is that of operating a sliding roof for a theater in Paris. According to a foreign publication the oval roof of the hall is divided into two parts, each of which is carried on four rollers traveling on a track. When once open the movable parts of the roof travel and press upon two sheltered platforms placed one above the stage and the other above the entrance hall. The rollers nearest to the center of the roof are arranged on each side on two axles, which are put respectively into motion by means of a sprocket chain and a train of gearing, the latter including a pinion arranged on the shaft of an electric motor. The two motors are arranged on each side of the roof. They are calculated for a speed of 1000 revolutions. On one side of the roof are suspended seven hard copper wires, upon which rub sliding contacts fixed to the two parts of the bridge. These wires are numbered, and are connected to insulated conductors leading to the switchboard, from which the roof is operated. The two circuit wires are brought in through a double pole cut out protecting a two-pole switch. From this switch one of the conductors is led to two switches, or magnetic cut outs, which are regulated in such a manner that the circuit of each motor is automatically opened if the intensity of the currents exceeds 10 amperes. Leaving these appliances the two circuits are conveyed each to a changing switch having suitable resistances for regulating the current. These changing switches carry two movable contacts which are insulated from each other. The upper is for putting in or out of a circuit a smaller or larger amount of resistance, and consequently varies the intensity of the current, this corresponding to alterations in the speed of the motors. Moreover, it assists the lower one in serving as reverser and in changing the direction of the current in the armature without altering that passing through the magnets in such a manner as to assure the change of the direction of rotation of the motors. In the positions occupied by the changing switches the switches are out

of circuit and no current traverses the motors, which are, of course, stationary. The two large semicircular segments placed at the bottom of the two switches are connected to the bare wires. The brushes connected at the entrance of each of the armatures make contact on these wires. On starting the motors absorb between 9 and 10 amperes, but once in operation the current used ranges from 5 to 7 amperes. The operation of putting the sliding roof in or out of position is effected in less than one minute at a cost of about a penny.

Arranged upon the two halves of the roof and on the vertical face of the bridge are two contacts, which, shortly before each part of the roof reaches the end of its travel, press upon two buttons, each actuating an electric bell placed under the switchboard. The latter are arranged in a battery circuit, and on ringing they indicate to the attendant, first, that stoppage is near, which allows the man to manipulate the rheostat so as to diminish the speed, and, secondly, on ceasing to ring, that the sliding parts have reached the end of their course, the contacts having passed over the buttons. If at this moment the attendant were to forget or neglect to interrupt the current, it might happen, the motor being unable to revolve because of its being wedged up, that the current would reach a value which would put the motor out of use. At that moment, however, the magnetic cut out acts and breaks the circuit. This apparatus is simple and is said works well.

FLASHINGS.

THOMAS H. HAYES, Waterbury, Conn., will build a brick waterhouse which will have a tin roof and a galvanized iron cornice.

LYLES & MILLS, 231 William street, New York, have a number of new designs in sheet metal ceiling and side wall panels, moldings and borders which will make their appearance in a new catalogue which is now in course of preparation. They are now preparing the work for the audience room of the new church at Sound Beach, Conn. They are also doing the work at the new school, 117th street and St. Nicholas avenue, and have completed a \$6000 contract for Hilton, Hughes & Co., and recently completed a contract of equal size for Telf, Weller & Co., 326 Broadway.

THE TROY PAINT & COLOR WORKS, Troy, N. Y., issued a colored card calling attention to the American Seal builders' and roofers' elastic oil cement. The front of the card is lithographed in colors and the back contains information about the use of roofing cement, with price lists.

THE MANILA FOLDER issued by the Metal Stamping & Spinning Company, Grand Rapids, Mich., will be of interest to the roofing and cornice trade, as showing examples of stamped ornaments, trimmings, &c., which this well-known firm put on the market. The sizes accompany the illustrations, and

the end of the folder, which is arranged for tearing off, gives an addressed order card to be sent to the Metal Stamping & Spinning Company.

THE BUSINESS formerly carried on by W. E. Spangler of Newark, N. J., manufacturer of the Spangler Single and Double Lock Edger and Folder, is to be continued by the W. S. Tool and Machine Works of York, Pa.

THE TROY COAL, TAR AND CHEMICAL COMPANY of Troy, N. Y., have been incorporated to manufacture and sell, among other goods, roofing and sheathing felts. The capital of the concern is \$25,000, and the directors are W. H. Squarey, C. W. Billinger and J. Cayrd of Troy.

THE ST. PAUL ROOFING CORNICE & ORNAMENT COMPANY, St. Paul, Minn., issue their special catalogue for 1895 addressed to architects and sheet metal contractors. The goods include stamped ornaments, steel ceilings and patent metallic sidings, as well as a large variety of pressed sheet metal work. The new features in this catalogue to which the concern direct particular attention are the remodeling of old buildings and which, by the system they employ—using their jointed siding plates and enriched with pressed zinc works—opens up a large field for architects and cornice-men. Illustrations of this work are shown in the catalogue. The metal faced, cement filled, fire proof building wall, upon which they have a recent patent, is alluded to, likewise their zinc ornaments, mostly from their own original designs. The volume, which contains some 40 pages, is most profusely illustrated and presents a very great variety of goods for the choice of the sheet metal worker. Along with the illustrations are particulars of sizes and prices, and where the subject warrants it full descriptive particulars are presented. At the end is a telegraphic code which will be of assistance in quick ordering. The pamphlet is bound in tinted paper.

THE SIMS MFG COMPANY have been changed to The Tucker Mfg. Company, Newark, Ohio. The company manufacture the well-known Sims roof gutter and Sims adjustable eave trough. A new brick addition has been made to the former plant, 80 x 100 feet, two stories high, in which a number of new and special machines have been installed. An elevator with capacity for lifting 2000 pounds and a 25 horsepower Westinghouse engine have also been added to the company's equipment. They state they are now in position to promptly care for all orders received, no matter of what magnitude.

FRANK VOIGTMANN, 120 and 131 North Franklin street, Chicago, has the contract for the copper work and tile roofing for the First Presbyterian Church, Evanston, Ill.

THE JEFFERSONVILLE CORRUGATING AND ROOFING COMPANY, Jeffersonville, Ind., issue a 12 page pamphlet calling attention to their manufactures. The first goods shown are their V-curved iron roofing, which is followed by corrugated roofing and siding of different styles. Then pressed standing seam roofing, roll and cap steel roofing, iron weather boarding, ridge caps, &c. Each page of the pamphlet emphasizes the fact that they sell only to jobbers. Particular attention is called to their roll and cap or standing seam iron roofing, which is fully illustrated.

SCRAP.

THE INSTALLATION of their tenth black plate mill has just been completed at the plant of the American Tin Plate Company, Elwood, Ind. A new sorting room is also on the point of being finished. The company are now employing 750 men at their works.

R. S. NEWBOLD SONS & Co., manufacturers of tinning machinery, Norristown, Pa., have increased their capacity by taking over the Eagle Iron Works, in that place. They propose making considerable improvements in the plant.

THERE has just been formed in Budapest, Hungary, a new company under the name of the Ungarisch Englische Metallwaren Gesellschaft, with a capital of \$130,000, the majority of which has been subscribed for in England. This company, to which reference was made in a note in these columns last week, has been formed to establish a plant for the manufacture of tin plates in Hungary. Among the directors are William Williams, J. W. Hughes and Roy Pritchard, all of Wales.

ACCORDING to the monthly statement of the Collector of Customs at this port there were 8,321,630 pounds of tin plates, valued at \$169,059, held in bonded warehouses in New York on March 31, 1895, as against 9,631,584 pounds, valued at \$209,092, similarly held on the corresponding date of last year. Reducing this amount to boxes of 112 pounds, it will be seen that the declared value of tin plates has shrunk in the interval about 16 cents per box.

A LARGE NUMBER of Welsh tin plate workers arrived last week in the American line steamer "Paris," from Southampton, and a further number are said to be on their way. Welsh papers remark that among these men are some of the best and most experienced workmen; and the curious part of the migration is that they are not generally men who are out of employment and driven to leave the country on that account. Most of these men, it is said, have voluntarily given up employment on the other side in order to come to this country, believing that there will be a better field for them in the United States in the future. The families of the men are preparing to follow them to this country.

THE ANDERSON FOUNDRY & MACHINE COMPANY, Anderson, Ind., who are now making a specialty of tin plate machinery, are reported as being full of work, necessitating the operation of their plant by night as well as by day, for the first time in two years. The company are planning a considerable addition to the capacity of their plant.

THE TINNING MACHINERY has been placed in the new works of the National Tin Plate Company, Elwood, Ind., during the past week. The plant is reported as fast nearing completion, and it is expected that it will be ready for operation soon after June 1.

AMERICAN TIN PLATES, and especially roofing terne, are having a heavy run in the district of which St. Louis, Mo., is the center. All the mills feeding that market are reported as being behind their orders.

THE MONONGAHELA TIN PLATE COMPANY, Pittsburgh, Pa., have introduced a number of women into their works. They are known as separators, and are under the direction of a woman who has worked in tin mills in Wales.

Two additional mills are being put into the Morewood Tin Plate Works, at Gas City, Ind.

THE NEW NORTON TIN PLATE & CAN WORKS, at Baltimore, Md., will consist of a tin plate works 275 x 60 feet and a can factory of 290 x 60 feet.

THE TOTTEN & HOGG IRON & STEEL FOUNDRY COMPANY of Pittsburgh, Pa., manufacturers of engines, rolling mill and tin mill machinery, are still running their shops night and day. They have lately shipped eight mills to the Montpelier Sheet & Tin Plate Company of Montpelier, Ind., eight mills to the National Tin Plate Company of Anderson, Ind., two mills to the Baltimore Iron, Steel & Tin Plate Company, Baltimore, Md., and are now ready to commence shipping the machinery for the Laughlin Nail Company's plant, at Martin's Ferry, Ohio. They have already sent forward the buildings, which are being erected as fast as possible. The Totten & Hogg Company are building the entire plant for the Laughlin Company, and when it is completed it will be one of the largest and finest plants in the country, as it will eventually consist of ten hot mills and seven cold rolling mills.

THE OHIO RIVER SHEET & TIN PLATE COMPANY of Pittsburgh have made application for a charter of incorporation. As already noted, this concern have let contracts for the erection of a tin plate plant at Rochester, Pa. A number of those prominently identified with the new concern are tin plate workers who were formerly employed at the plant of the U. S. Iron & Tin Plate Mfg. Company, at Dammer, Pa. The Leechburg Foundry & Machine Company have the contract for the erection of the plant.

THE MONONGAHELA TIN PLATE COMPANY, Pittsburgh, manufacturers of black plates, are now running six mills and expect to put three additional mills in operation in a short time.

THE COATES of Baltimore, who formerly owned the Locust Point Rolling Mill & Tin Plate Works, have leased the old rolling mill of the Baltimore & Ohio Railroad Company, at Cumberland, Md., which they will, it is announced, turn into a tin plate plant.

WORK has been resumed this week at the mills of the Waterloo Tin Plate Company, Machen, Monmouthshire.

WE HAVE BEEN FAVORED by Marshall Bros. & Co. of Philadelphia with two handsome sample sheets of their best quality of bright charcoal and terne plates, which, from inspection, go far to justify the high claims made by this concern for their product. The roofing plate stamped "Marshall" is an extra heavy coated spangle terne, carrying, they inform us, from 28 to 30 pounds of coating per box. The coating is very evenly impoited and the plate itself appears to be of the best quality. The accompanying sample of the firm's "Penn Treaty" charcoal plate, which they are selling in competition with the foreign "Melyn" grade, seems to be in every way the equal of that well-known brand. Messrs. Marshall inform us that these plates are giving great satisfaction to their customers. They are made from black sheets rolled at the firm's own mill.

A NEATLY GOTTEN UP CIRCULAR, printed in red and black, and headed

by an emblem representing the "Bird of Freedom" bearing in its talons a box of tin plates marked "Trotter's American New Method," reaches us from Nathan Trotter & Co., 36 North Front street, Philadelphia. The circular draws attention to the fact that the firm are now producing at their works in Philadelphia, by a new method, with improved American machines, a roofing plate under the before mentioned name, which they claim to be the finest extra heavy double coated terne on the market, and each sheet of which is stamped with brand and thickness. The firm have also favored us with a sample of a handy little blot sheet, which they are distributing to the trade, and which, on one side, sets forth the merits of "Trotter's Roofing" tin.

Iron and Steel Sheets.

The regular monthly meeting of the Iron and Steel Sheet Manufacturers' Association was held in the Conestoga Building, Pittsburgh, Pa., on Wednesday, the 17th inst.; J. G. Battelle of the Piqua Rolling Mill Company, Piqua, Ohio, presided, and John Jarrett was secretary. The meeting was very largely attended, nearly every concern in the country making iron and steel sheets being represented in person. It has been recognized for some time that something should be done to bring about some improvement in the condition of the sheet trade, as prices are claimed to have been very unprofitable for a long time. Another point that was up for discussion was the great difference in prices charged by different concerns for the same gauges. Upon investigation it was found that on the same gauges differences in prices ranging from \$2 to \$4 a ton existed, and for the purpose of bringing about more uniformity, it was suggested that a 2.20 cent base be fixed as the price of No. 27 steel sheets, f.o.b. at mill. It was also agreed to ask an advance of $\frac{1}{2}$ cent per pound on all gauges, and not to enter orders for delivery after July 1. Nearly every concern represented at the meeting reported that demand has been improving for some time, and a large tonnage has been booked for delivery between now and July 1. In view of a possibility of still higher prices for raw material it was deemed advisable to not sell after the above date at present prices.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

THE CONTRACT for the steam heating of the Fort Dearborn Building awarded to Kroeschel Brothers, 41 to 55 Erie street, Chicago, has been completed. It contains 14,000 feet of radiation surface. There are three boilers, 60 x 16 and 75 horse power, three Barr pumps for boiler and house supply. There are 323 radiators in the building equipped with the Johnson system of electric valves, and the Kroeschel feed water heater is also intact. Taken throughout it is said to be a first-class system and has been placed without stint of space or money. The Durham system of plumbing is used and was constructed by Hanley & Casey of 21 Quincy street. In this system all the vertical risers, wastes, vents and

down spouts are of wrought iron pipe, coated inside and outside while hot with coal tar varnish. All pipes for carrying sewage in the ground under the building are of cast iron, cast in 12-foot lengths. Hanley & Casey, owing to the growth of their business, have moved to their new quarters, 17 Plymouth place, where they will have a shop 30 x 100 feet and also their offices.

ARTHUR SHEA, Rockland, Me., has a crew at work plumbing the John A. Lowe house, Vinalhaven, and another large crew at Squirrel Island working on the big hotel there.

ANDREW MOE, Eau Claire, Wis., bid \$1150 and secured the contract for plumbing the Third Ward School.

THE ST. ELMO CHAPTER HOUSE at Yale College, New Haven, will be built by A. W. Burritt of Bridgeport, Conn. The building will cost \$25,000, including the heating plant which will be needed.

JAMES E. LACEY, Hartford, Conn., is building a block of brick three-story flats which will have a sanitary system and a heating system.

A NEW PAROCHIAL SCHOOL will be built at Bridgeport, Conn., under the supervision of the Rev. Father O'Brien. It will have a slate roof and galvanized iron cornice, and a system of heating and plumbing.

BARLOW BROS., Waterbury, Conn., have the contract for the plumbing in the new factory of the Waterbury Machine Company, and in the new Washington School Building.

JOHN M. PAGE & Co., Naugatuck, Conn., have the contract for heating and plumbing the new house to be erected for George Runney on Hillside avenue. A hot water system will be put in.

THE CONTRACT for the plumbing, gas fitting, heating and ventilating in the Hart Memorial Library Building has been awarded to Mulligan & Schermerhorn of Troy, N. Y.

JOHN D. MOUTAT, Detroit, Mich., has contracted to do the plumbing and gas fitting in Traugott Schmidt's new eight-story building; also to do the steam heating, plumbing and gas fitting in A. C. McGraw's apartment building, "The Jefferson."

BUEKEL & Co. of Boston, Mass., are heating the addition to the store of R. H. White & Co. in Boston, and are using the Exeter radiators; the same radiators are also being used by W. E. Paul of Portsmouth, N. H., who is making improvements in the heating apparatus of the Fiske House, at Old Orchard.

THE plumbing contract for the new Physics Building at Kansas University has been given to the Lawrence Plumbing & Heating Company, Lawrence, Kan.

JESCHKE & TIMPLE, 398 West Chicago avenue, Chicago, have the contract for the plumbing and drainage in the residence of J. Fritz, 39 Samuel street.

CHARLES KOSTEVY, 218 West Eighth street, Chicago, is to do the plumbing and drainage in the flat building of James Matousek, Twenty-second street and Kedzie avenue.

RICHARD TAIT, 605 Sixty-ninth street, Chicago, has the contract for the plumbing and drainage in the flat building of Frank McPhetridge, Howard street.

FREDERICK SCHOLEFIELD, 310 South California avenue, Chicago, is to do the plumbing and drainage in the flat building of J. Berry, 1190 Congress street.

JACOB COURATH, 5900 Princeton avenue, Chicago, is to do the plumbing and drainage in the two flat buildings of Frank P. Burke, Wabash avenue, near Forty-eighth street.

DAVID WALSH, 6848 South Chicago avenue, Chicago, has the contract for the plumbing in the flat building of P. J. Simmons, 6223 Langley avenue.

FREDERICK NEUSTADT, 300 North avenue, Chicago, is to do the plumbing and drainage in the residence of W. Ocock, 23 Florence avenue.

FRANK J. RUH, 1204 Diversey street, Chicago, has the contract for the plumbing and drainage in the flat buildings of W. Haferkamp, 1150 Seminar avenue, and W. E. Howorth, 1398 North Clark street.

JOHN C. GUNDERMANN, 182 North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of M. Nortmire, 1438 Roscoe street.

NOBLE & THUMM, 288 Lincoln avenue, Chicago, have the contract for the plumbing and drainage in the flat building of M. Lurdquest, 1727 Sherman place.

ALWIN W. BARN, 393 Gross Park avenue, Chicago, is to do the plumbing and drainage in the flat building of J. Keister, 1114 Diversey street.

KIRLEY & STAHL, Albany, N. Y., have been awarded the contract for plumbing in the new Public Building at \$1347.

JAMES BATHGATE, Cohoes, N. Y., has a contract for the plumbing in the new residence of Police Sergt. Jamison.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until May 8, for the low pressure return circulation, steam heating and ventilating apparatus for the U. S. Post Office, &c., Building, at Worcester, Mass. Copies of drawings and specifications can be obtained from the Supervising Architect, Washington, or from the Superintendent at Worcester.

THE NEW ORLEANS RAILROAD & SUPPLY COMPANY, New Orleans, La., have contracted for installing a heating plant in the new St. Charles Hotel, and will use 30,000 feet of Niagara radiators.

THOMAS W. WEATHERED'S SONS, 141 Centre street, New York, are building a fine conservatory and installing the heating system for H. H. Cook, Lenox, Mass. It consists of a palm house, grape, violet house, rose house, propagating house, and a potting house. They are also building a large conservatory for Leopold Strauss, Baltimore, Md., in which they are installing the heating plant.

E. RUTZLER, 178 Centre street, New York, has the contract for heating the University Building at Washington Square, New York, and will use 13,000 feet of Joy's Crescent radiators.

The Secretary of War has informed the city authorities of New Haven, Conn., that a drawbridge must be built over the Guinnipiac River at that place in the room of the existing structure. The city must build the bridge before the end of next year.

STOVE TRADE NOTES.

Stove Secretaryship.

We have received from a member of the stove trade the following communication relative to the stove secretaryship:

The death of Mr. Thomas leaves vacant a most important position affecting the interests of the stove manufacturers, and it will be well for members of the National Association to consider who should fill his place. An election for permanent secretary will, no doubt, be held at the next meeting of the National Association of Stove Manufacturers in May, and I desire to use your columns to present for the consideration of the Association the name of a gentleman who is now vice-president of the Defense Association and under whose able and wise management, since he has filled that position, several strikes have been avoided, the interests of the Association fostered, and matters in several cases arranged to the satisfaction of both employer and employee. As a stove manufacturer he has had over 30 years' experience, and no man knows better how to handle the many vexatious questions which confront the stove manufacturers. I feel confident that all members of our association who have been in any way connected with William T. Bradberry will agree that he is eminently fitted for the place. Mr. Bradberry resides in Pittsburgh and is president of the Anshutz Bradberry Company.

Test of the Perfection Gas Range.

The old truism that "the proof of the pudding is in the eating thereof" was, so to speak, recently given an airing when the Union Stove Works, in order to thoroughly test the Perfection gas ranges, for which they have the sole control and sale in New York, New Jersey and all the New England States, gave to a number of their clerks a "Delmonico" dinner, cooked by means of one of the ranges named. The one selected was a No. 171 Perfection, designed for use in ordinary families, the argument being that if enough food could be cooked with it to satisfy the taste and capacity of 12 clerks with no particular reputation for small appetites, it would certainly be all sufficient to do the cooking in an ordinary family. The company's cashier acted as chef and was assisted more or less by suggestions from the trio of young ladies in the service of the company. The dinner was practically an impromptu affair, and was suggested while a trial of the oven of the range was being made to bake a few biscuits. Acting on the suggestion, a 10-pound roast and a 4-pound shad, together with all the vegetables, sugar, milk, butter and all necessities for sauces and fixings were purchased, and in the afternoon the stove was started up, the chef getting in his fine work, producing a dinner to which all the clerks sat down and devoured, after closing hours, and which all pronounced A. 1.

There might be some slight exaggeration in saying that the viand rivalled

anything that could be obtained at the "Martin" or "Delmonico's" and yet it would be understating the truth if it were not said that everything was done to a turn, and settled any question as to the baking or boiling qualities of the range beyond any shadow of a doubt. The 10 pound roast of meat was roasted in the lower oven while a large batch of biscuits was baked in the upper oven, and later the shad was broiled in the lower oven while a cottage pudding was baked in the upper oven.

A Suggestion to Furnace Makers.

A correspondent, signing himself "Jersey," sends us the following communication that will be read with interest and possibly with profit:

Your Trade Notes on furnaces in *The Metal Worker* April 6 were interesting, and if you get more let us have them. Dealers putting up furnaces will be glad to do good work if they can get paid for it. Much of the work now put in new buildings is bad enough, we all know, but well worth the price paid for it by the builder. We all do good work when we can and have customers looking to us to give them value for the money. Suppose you suggest to the manufacturers that it is a good idea when they make a "standard" to live up to it for a year or two, and not put out a cheap heater with name and outside appearance so like the "standard" that the owner will not know the difference. It is not fair to the dealer to ask him to "fool" his customer. If we sell our customer the "best on earth" this year, we want to give him the same quality next year and not have him suppose the dealer around the corner can furnish the same thing at half our estimate.

West Side Foundry Company.

The new illustrated catalogue of the West Side Foundry Company, Troy, N. Y., and with offices in Buffalo, N. Y., and Toledo, Ohio, is a very tasteful publication, nearly square in form with rounded corners and covers of a handsome shade of green, the "Owl" and crescent trade-mark of the company constituting a prominent embellishment. The company are makers of the Paris ranges, stoves and heaters, having succeeded the Paris Mfg. Company in May, 1894. Having purchased all the right and interest of the Paris company they retain the name "Paris" as a brand and the "Owl" as a trade-mark. The company have greatly improved, simplified and increased their lines of ranges, heaters, etc., and refer to them at length in the catalogue under review. The first described is the Paris Ideal, a 6 hole range with smokeless attachments, ventilated oven, sheet flue, drop oven door, made to swing upon hinges or divide in the middle, the lower half becoming a shelf; a rake attached to the oven shelf by which any dish can be brought to the front of the oven or

on the lower half of the door without putting the hand into the oven, and a hot closet near the oven under the reservoir.

The Daisy Ideal, another 6 hole range, having the same features as the large Ideal, with the exception that it is made only with swing oven doors and intended for either hard or soft coal or wood; the famous Paris, a centre fire box range, with sheet flue construction and ventilating oven; the Double Draft 6 hole range, with smokeless attachments, broiling arrangements, &c.; the Paris Home Comfort, one of the latest patterns, with very large oven. It has a slide hearth, large ash pan, removable grates, and is designed for either hard or soft coal or wood; the New Home Comfort 6 hole range, made in four sizes, for hard or soft coal or wood; the Paris Marvel, a heavy, durable, 4-hole range, moderate in price and handsome in design, and the Masterpiece range, made exclusively for soft coal or wood, and having soft coal pouch feed and iron linings, are some of the goods which follow. The Peacemaker is one of the regulation style cook stoves, designed for soft coal or wood, having triple surface or duplex grate, and made in two sizes, fully nickel plated. The Morning Pride is similar to this one, but has a soft coal pouch feed and heavy iron linings. The Town Talk is a large handsome cook, with fire box 24 inches long, and the Paris Premier range, which follows, is especially adapted for flats or apartment houses. It can be furnished with high or low closets, extra high shelf for horizontal boiler, water fronts and couplings and square oven. The Masterpiece square parlor base burner is an entirely new stove of original design. The hot air circulation is accomplished through two flues in the back in conjunction with the main flues. It is easily taken apart or put together and is offered in two sizes. The Masterpiece Junior is new this season, and has automatic feeder cover, removable fire pot, large ash pan, anti-clinker draw centre grate, &c. It is made in three sizes. The Imperial base burner is another novelty, with very large slide base flues, the heat passing down between the fire pot and the sheet iron section around the entire body of the stove to the slide flue and base and then through the centre of the base to the exit. It is made in three sizes with sheet or cast iron body and has all the late features. The Paris Cottage and parlor range combined is a rather unique construction which can be used for cooking and baking and is made in two sizes. The Fernwood is a neat wood parlor, with two boiler holes on top, and can be used for cooking purposes. It is made either direct draft or with double reversible flue.

THE READING STOVE WORKS, Reading, Pa., resumed operations in that portion of their plant which was closed down a short time ago on account of necessary repairs to the engine. These having been completed the works started up on the morning of Saturday, April 6.

Oil Stoves in Turkey.

A recent report from the French Chamber of Commerce at Constantinople, published in the *British Trade Journal*, which speaks of the growing demand for oil stoves in Turkey, and the possibility of building up a considerable trade in these articles in that country, may be of interest to the manufacturers of oil stoves in the United States. The report runs as follows: For the past two years petroleum stoves have been imported from England and they have met with some success. They usually consist of a very large petroleum lamp, the glass of which (red at the bottom, white in the middle and green on top) is surrounded by an iron wire trellis. The lamp rests in a socket sustained on feet which are elegantly joined to a large cap or head piece, the surface of which is flattened to receive a vessel for boiling water. Other types have since been introduced, but whereas in the winter of 1893-94 these stoves were not noted they have become quite fashionable for winter use in 1894-95. These goods will probably have an extensive sale in the coming winter. In general, an elegant, strong article is demanded; one which cannot be easily overturned. The lamp should be easily extinguishable, and cleaning and lighting should not be attended by any difficulties. It should burn common petroleum without emitting any smell and chimney glasses should be done away with. These stoves fetched this year from 40 to 46 francs apiece retail, or one-half the price paid in England. It is estimated that from 200 to 300 stoves were sold in 1894, but the trade next year is expected to be ten times as much.

Dowagiac Restores Wages.

The entire stove trade is interested in the news sent out from Dowagiac, Mich., on Tuesday. The strike in the Round Oak Stove Works has been settled, the manufacturers agreeing to restore the former schedule of wages. It is not often that labor troubles in a single establishment assume so much importance as in this case, but the circumstances have been peculiar. Much depended upon the outcome of the strike at Dowagiac. Usually the sympathies of other manufacturers are with an establishment having a strike on its hands. Help is often extended, and in many other ways encouragement is given, for other employers are apt to feel that they may at some time be involved in a labor trouble themselves and may need the active co-operation of their colleagues. But the strike at Dowagiac was not regarded from the usual standpoint. A cut in workmen's wages had been made in contravention of the policy of the National Association of Stove Manufacturers, the reasons for which have been frequently set forth in these columns. A simultaneous reduction in the price of oak stoves was announced, which was also not in conformity with the policy of the associated manufacturers. They preferred to maintain the price of stoves and pay their workmen the same rate of wages as was paid when times were good, believing that no more stoves would be sold in the aggregate even if prices were cut. The Round Oak Stove Works proposed to try the other policy.

At a conference recently held in Chicago between representatives of the Stove Founders' National Defense Association and the Molders' Union, an agreement is said to have been reached

by which the manufacturers of oak stoves belonging to that association were to be favored with the same reduction in wages as that made at Dowagiac. If, however, the old rate of wages should be restored at Dowagiac, no cut was to be made by the manufacturers referred to. The officers of the molders' union were of course very anxious to keep up their members' wages, and from that time made every effort to secure a change in the policy of the managers of the Round Oak Stove Works. That they have succeeded is shown by the news sent out from Dowagiac on Tuesday. It is to the credit of the Round Oak Stove Works that the managers have not decided to obstinately adhere to the course which they had marked out for themselves. Had they steadfastly determined not to listen to the appeals of outsiders, but to press the reduction in wages and in the selling price of their stoves, a reduction would shortly have been made in competing establishments which would very probably have spread to other classes of stoves, seriously unsettling matters all along the line. As it is, wages will now be maintained at the old standard in stove foundries, prices of stoves will not be demoralized, and members of the trade in general will continue to know precisely where they stand. It is a source of great satisfaction to know that a most irritating question has been thus satisfactorily settled.

ODD PLATES.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, are building a fine addition to their already extensive plant. It will be of brick, three stories high, and will cover a ground space 169 x 150 feet. With the present building this will give the company a frontage of 400 feet. The entire structure will be used for their own purposes. In a court in the center will be erected a large jannpaning building, 80 x 30 feet, two stories high, which will be heated by steam instead of by coke in the old-fashioned way. The company further propose to put in a generator to enable them to run their machinery by electricity. Each shop will then have a separate motor, and in some cases short stretches of shafting will be run by a separate motor, so that special departments can run overtime, when necessary, without running the whole factory. A large part of the first floor will be used for offices, it being the intention of the company to provide offices of a much more convenient and attractive character than those which have thus far been used. The additional factory room was, however, most imperatively needed, the present quarters being uncomfortably overcrowded.

THE NATIONAL VAPOR STOVE MFG. COMPANY, of Lorain, Ohio, have been reorganized and are now proceeding on a sound basis. Charles E. Adams of the Cleveland Hardware Company, is president and manager, H. B. Hunt is vice-president and Joseph Colwell is treasurer. The stockholders are prominent business men of Cleveland, who propose to push the business of the company from this time forward. The factory is well located as to railroad facilities, finely equipped with machinery, and is at present employing 75 men turning out generator stoves for this year's trade. All arrangements are being made for the addition of new process stoves to the company's line, so that their customers can be supplied with such stoves for next year's trade.

Among the assets of the old company was a license for the manufacture of these stoves, which the new company will now make effective.

THE VAPOR STOVE ASSOCIATION held their regular April meeting in Cleveland on Wednesday of last week. Nothing of special interest transpired beyond an agreement to hold the August meeting at Mackinac, in order to get the full benefit of bracing lake breezes. It will take place on the 6th of that month.

THE FAVORITE STOVE & RANGE COMPANY of Piqua, Ohio, are the complainants in a suit brought in the United States Circuit Court at Cincinnati against Herman Soehner, a stove dealer at South Jefferson, for alleged infringements of a patented improvement in cooking stoves. The petition alleges that Stanhope Boal of Piqua, Ohio, is the inventor of the improvement which he has had patented and assigned to the complainants.

THE PITTSBURGH STOVE COMPANY of Pittston, Pa., resumed operations on Tuesday, April 9, the plant having been idle for some little time past, owing to differences existing between the employees and the management.

THE WICHITA STOVE & IRON WORKS, Wichita, Kansas, are now occupying their new buildings on First street, between the Atchison, Topeka & Santa Fé and the Chicago, Rock Island & Pacific Railroad tracks. The new building is 108 x 100 feet in size, the east front resting on the Rock Island and the west front on the Santa Fé road. The main building is two stories its full length, with one story wings on each side and at the east end, making the ground floor plan T-shaped. We understand that the company have some new designs of stoves which they expect to place on the market in a very short time.

THE NEW FOUNDRY of the Clark Stove Company, Armourdale, Mo., is nearly completed and the machinery is largely in place. The company have several new patterns of stoves which will soon be placed upon the market, and when the works are started it is expected that a force of 30 skilled workmen will be employed.

MOSER & WEHRLE of Newark, Ohio, closed their works on Saturday, April 6, all employees being notified that the plant would be idle for a month or more. No reason was given for the shut down except that the company were overstocked with stoves.

THE SCHNEIDER & TRENKAMP COMPANY have recently issued a circular stating that the continued increase of their Western business has obliged them to look for larger and more commodious quarters in Chicago, Ill. They have therefore secured offices and warehouse at 62, 64 and 66 South Canal street, where they will carry a large and complete assortment of both gas and gasoline stoves, together with a full line of repairs. This will enable them to supply their Western trade with goods promptly. Owing to the resignation of H. R. Hamilton, their Chicago representative, George W. Rue will hereafter have the management of their Western business. Mr. Hamilton will continue doing business at the old stand, 67 and 69 Lake street.

THE DETROIT STOVE WORKS, Detroit, Mich., are distributing a 24 page pamphlet of pocket size, relating to the Detroit Jewel gas stoves, which are manufactured in varieties to meet the wants of the trade. The goods are

tastefully illustrated and described in such a way as to emphasize their points of merit. Jewel burners are illustrated and described as well as Jewel hot plates or table gas stoves. A few of the advantages of gas as a fuel are also presented.

WE ARE INDEBTED to the Eclipse Stove Company of Mansfield, Ohio, for a copy of the quarterly calendar which they are distributing to the trade with their compliments. It covers the months of April, May and June, each leaflet having as a background a picture of one of the company's cook stoves or ranges. Each leaf is intended for six days only, Sundays being omitted. The printing is in red and green upon a paper of light straw color, attached to a buff card measuring about 7 x 9½ inches, which is intended to be hung up. Across the top is the trademark of the company, while down the sides is a request to write for catalogue and discounts.

THE MEYER FURNACE COMPANY of 1300 1304 South Washington street, Peoria, Ill., have issued a 32-page catalogue calling attention to the Weir gas and soot consuming furnace, which is offered in several varieties, the heater being fully illustrated and described at considerable length. Directions, accompanied by a diagram, are given for setting the heater in brick work, while other views show the sectional fire pot and grates employed in connection with the furnace. The catalogue also contains a price-list of registers, borders and faces, as well as a large number of testimonial letters from some of those who have used the goods named.

W. E. PUFFER, 186 Beekman street, New York, is distributing to the trade a 24-page catalogue of his automatic furnace regulator. The regulator is operated by the expansion of a brass tube which is placed in the hot air chamber above the radiator of the furnace. It is provided with an arm by which it may be attached to a lever operating the draft damper and check damper of the furnace. It is also provided with a dial by which the movement of the arm working the lever may be governed according to the requirements of the house, as indicated on the dial face. It is claimed that when the regulator is properly adjusted it will regulate the drafts so as to keep the air going through the furnace to the house at the desired temperature to secure comfort. Several pages are devoted to testimonials, and full directions are given for attaching the regulator.

THE FRESHETS, which are the usual accompaniment of the breaking up of winter, wrought considerable damage throughout various sections of the country during the past week or two. In the New England States rivers were higher than for a number of years past, and in some instances damage was caused in an unusual manner. In Bangor, Me., the most serious effect of the rain and freshet was experienced on the afternoon of Wednesday, April 10, when a landslide occurred. According to press dispatches from that city a large section of a high hill in the rear of the warehouse of the Wood-Bishop Company was so softened by the tremendous rains that it slid down upon the building, crushing it as though it had been an egg shell. The account states that the side of the building was torn in pieces and huge timbers were broken like pipe stems. In the corner where the weight of the slide struck

there were 100 ranges piled ready for shipment, and these, it is needless to relate, were made fit subjects for the scrap heap.

THE CRAIG REYNOLDS FOUNDRY COMPANY of Dayton, Ohio, last week issued a circular letter to the furnace trade, calling attention to the advantages resulting to dealers from handling the Triumph heaters. The company set forth the terms under which they will be glad to ship sample furnaces, and refer to the workmanship, construction and practical advantages as being of a character which have only to be understood in order to be appreciated. Accompanying the letter is a four-page folder illustrating various forms of the Triumph heater and setting forth some of the more important features of merit.

GEORGE M. CLARK & Co., 159-161 Superior street, Chicago, are offering a reward of \$500 for the recovery of the body of one of their foremen, George W. Ebersol, who disappeared April 2, and is believed to have been murdered. Mr. Ebersol was a young man of excellent habits and faultless domestic relations, had been in the employ of the firm for ten years, and had risen to be one of their most efficient and trustworthy foremen.

THE JOHN VAN RANGE COMPANY of 169 Elm and 4, 6, 8 and 10 Home streets, Cincinnati, Ohio, have furnished the entire culinary apparatus for a large restaurant just opened in Pittsburgh by the Goettman Brothers. This restaurant, we understand, has been fitted up regardless of expense, and the appointments are first class in every particular. A great deal of the cooking is to be done by steam, and the latest improved apparatus, with a capacity for 2000 persons at one meal, has been installed. The John Van Range Company have also furnished a new and very complete kitchen equipment for the Egnew, a hotel at Mt. Clemens, Mich., which opened on Thursday, the 18th inst.

W. F. GREENE, Troy, N. Y., was granted a patent on his Zero poker and lifter April 16, 1895.

"THE BEAVER FURNACE" is the subject of an exceedingly neat little pamphlet of eight pages which has been issued by W. E. Patchin, 195 Monroe street, Rochester, N. Y., sole agent for the heater in that city. The little pamphlet contains a few of the names of the most prominent residents of Rochester who have tested the merits of the Beaver furnace, and there are also given a number of letters showing the satisfaction which the heater has given in operation.

CLARK BROS.' new stove foundry on South Adams street, Armourdale, Kansas City, is practically completed. The building is of brick, and is said to compare very favorably with other manufacturing concerns in the city. It has been stocked with modern machinery.

A. C. BARLER MFG. COMPANY, manufacturers of Barler's Ideal oil heater, Barler's shoe blacking stand, &c., have removed from 111-113 Lake street, Chicago, to 104-106 Lake street, almost opposite their old location. They are now in a modern building, with increased facilities for the dispatch of business, having three floors, each 40 x 150 feet. They invite their friends and patrons to drop in and inspect their fine new quarters. They have recently taken the wholesale agency for the lawn sprinkler made by the American

Ball Nozzle Company of New York. This nozzle is a mechanical wonder. It is bell-shaped and in it is loosely placed a small light ball. The force of the water does not dislodge the ball, as one would suppose, but impinging on the surface of the ball is broken into spray, with no back pressure on the hose. Shipments will be made from stock arrived in Chicago. The company will sell to the retail trade, but will also make terms to jobbers.

THE MICHIGAN STOVE COMPANY'S Chicago branch has lost the services of Charles Breasted, who has been obliged to resign on account of his health. Mr. Breasted enjoyed the distinction of being longest in the company's service among their traveling men. His resignation was therefore regarded as something more than an ordinary retirement of an employee. Manager Fred W. Gardner personally gave a lunch at the Chicago Athletic Association in his favor, inviting the rest of the company's traveling men to be present. On behalf of the company Mr. Gardner on that occasion presented Mr. Breasted with a handsome pair of diamond cuff buttons, while the rest of the traveling force gave him a diamond pocket. In his presentation speech Mr. Gardner dwelt on Mr. Breasted's long association with the company, expressing the hope that at no distant day he might be so refreshed by his rest from the cares of business that he might be inclined to resume active relations with the company. He assured Mr. Breasted that he could never entirely sever his relations with the Michigan Stove Company. Matt R. Bingham, the next oldest of the traveling representatives, made the presentation speech in behalf of the men. The remainder of the afternoon was spent in enjoyment of the facilities for entertainment found in the Athletic Association's world famous club house.

THE representatives of F. M. Borden & Bro., Philadelphia, present an embossed card bearing the autograph signature of the firm preparatory to discouraging on summer cooking stoves and refrigerators when they visit the trade.

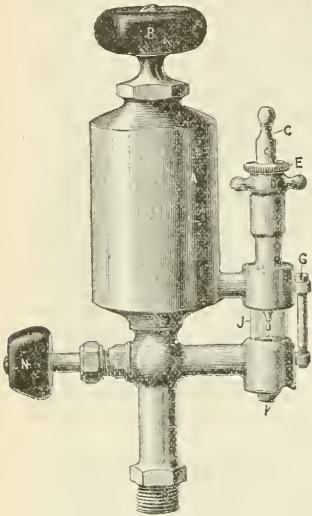
R. F. HARVEY, who has for several years been head clerk in Barstow Stove Company's New York office, corner Beekman and Water streets, has severed his connection with that firm to undertake the retail business in Twenty-third street, near Seventh avenue.

Catalogue No. 11, issued by the Ferracut Machine Company, Bridgeton, N. J., is a striking publication in its red cover. The catalogue is apparently of the usual size, measuring 7 x 10 inches, but when the cover is turned back it is seen that the interior part is double that size, folded over in the middle. By this means opportunity is given for presenting large illustrations of the machines made by the Ferracut Company. The catalogue illustrates new designs of foot and power presses, lathe, benders, dies, &c., for the working of various kinds of bar and sheet metals, and describes over 300 sizes and kinds of presses, although but a portion of them are illustrated. The first illustrations relate to heavy inclined and upright presses; then comes their press C4, a heavy tool, weighing 3400 pounds. Parabolic presses follow; then presses with adjustable beds. Punching presses of various sorts, also special deep throat punching presses, embossing presses, coining presses, double-crank stamping presses, follow in the

order named. Then light pattern presses, heavy pattern presses, double action drawing presses come later, as well as many other special styles. Altogether it is a most interesting publication for those who are concerned with press work of any kind.

The Powell Gas Engine Lubricator.

The gas engine lubricator made by the Wm. Powell Company of Cincinnati, Ohio, is provided with a "signal" stop feed device, and has a novel method of packing the sight glass, thus dispensing with the usual stuffing boxes. With the signal lever C in a vertical position, as shown, the feed is regulated by the milled screw head E. Screwing



The Powell Gas Engine Lubricator.

this head up or down increases or reduces the flow. When once the desired rate is obtained the screw is locked by the joint nut D. The flow is started with the lever C up, and it can be instantly stopped by turning the lever down, without disturbing the regulation.

Trade Notes.

THE NICHOLSON FILE COMPANY, Providence, R. I., send out a small catalogue illustrating the Files, Rasps and tools which they manufacture. It begins with a table of contents and an alphabetical index. The varieties of Files shown in the pages that follow cover every possible need of the trade. The shapes are shown by illustrations and the names and dimensions are given. Various specialties are also noted at the end as well as a price-list.

THE GILBERT & BENNETT MFG. COMPANY, Georgetown, Conn., 44 Cliff street, New York and 148 Lake street, Chicago, have recently installed at their Georgetown plant new boilers of 250 horse-power capacity and a 150 horse-power engine. They now have six engines at Georgetown, besides an extensive water power. They have also recently added a new two-story build-

ing about 150 feet long and 40 feet wide, which is being utilized for storage and manufacturing. The company, having thus increased their facilities, are now prepared to make prompt shipments of their specialties, including poultry netting, window screen wire cloth, pearl wire cloth, G. & B. web wire fencing and galvanized wire cloth.

THE STRUTHERS IRON & STEEL COMPANY, recently organized at Youngstown, Ohio, and which concern have purchased the plant of Summers Bros. Company at Struthers, Ohio, are now enlarging the capacity of the mill and are also remodeling it. The concern have placed an order with the Lloyd Booth Company, Youngstown, Ohio, for one 34 x 40 inch sheet mill, the housings for which will weigh 11 tons. They have placed an order with the same concern for one large pair of squaring shears. The company have under erection new furnaces and a new warehouse, and are building a new foundation for sheet bar mill. They will make their own iron bars and will run one sheet bar furnace, two scrapers and a few puddling furnaces. They expect to have their plant in operation not later than May 15, and will make all widths and lengths of either steel or iron sheets. J. Warren, Jr., will be general manager and Jos. Patterson superintendent.

THE PARSONS Manganese Bronze & Copper Company, Olney, Philadelphia, are about closing a contract for an addition to their rolling mill, about 120 x 90 feet, in which to erect rod rolls and install new machinery for manufacturing bronze rods and for stamping purposes.

THE ANNUAL MEETING of the stockholders of the Joseph Dixon Crucible Company, Jersey City, N. J., was held Monday, April 15, at the company's general offices at Jersey City. The following Board of Directors was unanimously re-elected: E. F. C. Young, John A. Walker, Daniel T. Hoag, Richard Butler, William Murray, Alex. T. McGill, Jerome D. Gillett. After the stockholders' meeting had adjourned, the newly elected board organized and unanimously re-elected E. F. C. Young, president; John A. Walker, vice president and treasurer; George E. Long, secretary. The Joseph Dixon Crucible Company, established in 1827, manufacture Plumbago Crucibles, Graphite Facings, Retorts and other goods used in foundries and smelting works; Lubricating Graphite, Graphite Greases, Graphite Paints and Dixon's celebrated American Graphite Pencils, and Carburet of Iron Stove Polish.

THE W. S. TYLER WIRE WORKS COMPANY of Cleveland, Ohio, have recently added to their factory equipment a Jenney dynamo coupled directly to a high speed Russell engine. The dynamo is used for electric lighting and also generates current for 70 to 80 motors located in the machine shop, carpenter shop and wire weaving department. Each machine is run independently and the arrangement is stated to be extremely satisfactory. The works at present are very busy. The company are giving more attention than at any time to previous to decorative designing and architectural work, although they are and will continue to be very large makers of poultry netting, window screen cloth, wire cloth for mining machinery and other woven wire fabrics.

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TRADE REPORT.

The Iron Market.

Reports are conflicting and reflect a somewhat mixed condition of affairs. While many in the Iron trade are very sanguine of an early recovery, there are many doubters. Buyers who are being offered material at old prices listen to stories of a rising market with much suspicion. While some talk of a further advance in Coke after July, others insist that even the recently fixed prices are not being really obtained. In Ore there are rumors of an early further advance of 10¢ @ 15¢ a ton.

The rise in Oil will probably force those rolling mills which have used it as fuel for reheating furnaces to go over to producer gas, and will probably not affect cost seriously. The Oil excitement is sure to stimulate the demand for Wrought Pipe and for Skelp, and in that way will do the Iron trade some good. We may note in this connection a sale of 7000 tons of Hoops for oil barrels.

In Foundry Pig Iron there has been quite a good deal of activity all over the country and the Southern furnaces have booked quite heavily. The majority of them have sold all they cared to place at the low figures recently prevailing and have withdrawn them. They are now asking higher prices, but have not got them yet so far as we can learn.

Pig Iron.—The market has been quite active, notably throughout New England, the Virginia, Alabama and Northern furnaces participating in the movement. Sales were made on the basis of the low prices recently prevailing, but now quite a number of sellers have withdrawn. The market is firmer, but is not yet notably higher. We quote \$12 @ \$12.50 for No. 1; \$10.75 @ \$11.55 for No. 2, and \$10.25 @ \$10.50 for No. 3 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.25 @ \$11 for No. 2; \$10 @ \$10.50 for No. 3; \$10 @ \$10.25 for No. 2 Soft, and \$10.50 @ \$10.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.50 @ \$10.

The demand for Foundry Irons is reported as steadily improving in the Philadelphia market, and although some Irons are held at a slight advance, buyers seem to get what they need at the old prices. The biggest advance claimed from the very lowest point is only 10¢ per ton on Southern Irons, and at inside figures 500 and 1000 ton lots could readily be secured to-day. There is no doubt the demand is better, and, with higher prices asked for Pennsylvania Irons, Southern brands have a better chance than they have had for months past. Sales have been quite large recently, inside figures being the rule, however, which, for Philadelphia, are as follows, and 30¢ @ 50¢ less for deliveries at points within 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

The business of the past week in the Chicago Pig Iron market was not

so large in volume as that of the previous week, but was nevertheless of a healthy character, showing a continuance of the buying movement. The demand for local Coke appears to be excellent, although no large contracts have recently been made. Orders are steadily refused at anything under makers' regular prices. Business in Southern Coke Iron was quite heavy, one contract having been placed for 1600 tons and several others for good quantities. Concessions can no longer be obtained, and furnace companies are repudiating sales made under their authorized figures instead of quietly accepting them, as had been their custom. The market looks very much better. Lake Superior Charcoal has recently been more active, and season contracts are becoming more numerous. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$12.75 to \$13.00
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	13.00 to 13.50
Southern Silvery, No. 1.....	11.75 to 12.00
Southern Silvery, No. 2.....	11.50 to 11.75
Southern Coke, No. 2.....	10.00 to 10.25
Southern Coke, No. 3.....	9.50 to 9.75
Southern, No. 1, Soft.....	10.00 to 10.25
Southern, No. 2, Soft.....	9.75 to 10.00
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.00 to 15.25
Other Ohio Silvery.....	14.25 to 14.50

There have been numerous sales of Pig Iron in the Cincinnati district during the week, and, in the aggregate, the tonnage has been quite heavy. There is, however, no real change in the statistical position other than that the furnaces are better provided with orders both for present and future delivery extending into the summer and fall months and therefore feel more independent and are seeking a solid foundation upon which to advance prices, especially for Southern makes. In fact, during the past few days many orders for Foundry grades have been "turned down" by producers in the South, who are regarded as occupying stronger and more independent positions than at any time during the past year. At the close there were several large buyers in the market who seek the placing of contracts of importance, but the market is found extremely firm even for round lots and long deliveries. One Southern Pipe works has been in the market during the week, but has placed its order direct with Southern furnaces. Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.00
Southern Coke, No. 2.....	9.00 to 9.25
Southern Coke, No. 3.....	8.50 to 8.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

A steady increase is noted in the demand for Pig Iron in the St. Louis market. Sales of carload lots are giving way to sales of from 100 to 500 tons, and prices are firmer in consequence. The increased number of inquiries now in the market indicates a decided interest on the part of the consumer. There is an undertone of strength to the market which

seems to have demonstrated itself to consumers, and they are now more anxious to anticipate their wants than they have been for months past. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.00 to \$10.25
Southern Coke, No. 2 Foundry.....	9.50 to 9.75
Southern Coke, No. 3 Foundry.....	9.00 to 9.25
Southern Car Wheel.....	16.00 to 16.50

A slightly better demand is reported in the Pittsburgh district, but prices show very little improvement. Quotations are as follows, for cash:

No. 1 Foundry.....	\$10.25 to \$10.50
No. 2 Foundry.....	9.75 to 10.00

Metal Market.

Pig Tin.—The advance in wholesale prices last week has been well maintained and a further gain made, with but little intermediate reaction. In short, the market has shown a remarkably strong tone in the face of more or less bearish influences brought to bear by some prominent operators and apparently determined effort to force values downward. The fact is recorded that shipments from the Straits during the first half of April were quite large, amounting to no less than 2440 tons, including 1800 tons to London, 110 tons to the United States, and 530 tons to the Continent. The additional fact is noted that no less than 1535 tons have arrived here since the beginning of the month. The somewhat ancient story is brought out that considerable accumulation of stock at primary sources of supply has taken place in the not very far distant past. The more substantial fact remains that operators on the "bull" side of the market have been the most aggressive, and carried matters their way to a great extent in the face of seeming adverse conditions. The consumptive demand has been good, and retail prices for small lots from stock have advanced about ½¢ per lb, Straits Pig being quoted to jobbers at 15½¢ @ 15¼¢, and Banca at 15¼¢ @ 16¢ per lb. At the close of the week, prices began to show some indications of weakening, the higher rates barely holding their own.

Copper.—The market has been moderately active and prices have undergone a further advance. The upward movement has affected Lake Ingot, Electrolytic and casting stock alike. Liberal engagements on former contracts, leaving only moderate stock available for early deliveries, seem to be the main stimulating influence to values. Some support comes, however, from the fact that former pressure by some dealers has been withdrawn, temporarily at least. No change has been made in quotations for small retail parcels, which remain on a basis of 10½¢ for Lake Ingot. The demand from consumers is hardly more than moderate.

Sheet Copper.—The movement in manufactured Copper has been rather more brisk this week. Some good sized orders for Cornice Copper which have been pending for some time have been placed, and the feeling among con-

sumers appears to be more healthy. Individual orders do not, however, reach the proportions generally looked for. Inquiry is active and the outlook for a good late spring and early summer trade is regarded as favorable. Mills are all reported to be busy on orders, present and prospective, but prices do not yet show any signs of improvement. Should the advance in raw material be maintained, however, the price of Sheet Copper is not unlikely to advance in sympathy before long. Small lots of Sheet Copper from store are quoted at the net list prices of 14¢ $\frac{1}{2}$ lb.

Pig Lead.—The market is very quiet, and a few sales of Common Western for early shipment have been made at a slightly lower figure than last week. This decline was partly under the influence of some bearish pressure at the West and partly due to lower rates on eastbound freight. The undertone of the market at the close was weakish. The price for small lots of American Pig from store rules at the same level it has held for some weeks past—viz., 3½¢ @ 3¼¢ $\frac{1}{2}$ lb.

Lead Pipe and Sheet.—The arrival of spring and the resumption of building operations have infused rather more activity into the demand for Manufactured Lead. The volume of business does not yet, however, come up to expectations. Nevertheless the outlook is regarded as hopeful for a good summer trade. Prices in this section are maintained on the list basis of 5¼¢ for Pipe and 6¼¢ for Sheet with a discount of 20 %.

Spelter.—A moderate business only has been effected, and the demand has shown no increase in vigor or volume. Wholesale prices have stiffened somewhat, however, chiefly under the influence of favorable advices from the West. Small parcels of good Western brands from store rule at 3¼¢ @ 4¢ $\frac{1}{2}$ lb.

Antimony.—No change in prices has taken place, but the market is rather weak. In small lots Hallett's is quoted at 8¢ and Cookson's at 9¼¢ @ 9½¢ $\frac{1}{2}$ lb.

Tin Plate.—As regards wholesale business the market continues unusually dull, although the volume of trade in 100-lb Cokes and other light Plates has been somewhat larger than that of last week. There has been quite a marked gain, however, in the smaller kind of jobbing orders, and some improvement is evident in the size of individual purchases—the hand to mouth system being not so prominent as heretofore. Roofing Plates are in much better demand than they have been, showing that building and repairing are beginning to be actively prosecuted with the advent of milder spring weather. Nevertheless, upon the whole the market remains flatter than usual at this time of the year, with prices rather weak. The block in Welsh Tin Plate production has caused many makers of well-known foreign brands to suspend quotations. This circumstance is offset, however, by increased offerings of American Plates of equal grades at very close to the prices asked for imported. Stocks in hand are fairly liberal, and it is said that a considerable quantity of Plate is held on consignment by banks, &c., which may at any time be placed on the market at bottom rates. These factors, it is thought, preclude the prospect of any present improvement in prices.

A special London cable dispatch of April 17, to *The Iron Age*, reports on the British Tin Plate market as follows:

Tin Plate has been quiet. Business at the quarterly meetings was light, owing to divergent views of makers and merchants and lack of buyers. Outside there was more inquiry for May delivery, and makers' prices for the same are higher. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 1C 14 x 20	9/3	②	....
Siemens Cokes, 1C 14 x 20	9/6	②	....
Terns, 20 x 25	18/-	②	2½
Charcoals, 1C 14 x 20	11/-	②	13/6

Sheet Iron.—Prices for both Black and Galvanized Sheets have put on additional strength during the week. The irregularity in this respect which has for so long characterized the market has quite disappeared, and prices are now quite firm, especially for Sheets of standard quality. The report on Thursday that the manufacturers of Sheet Iron, in session at Pittsburg, had agreed to advance rates on Black Sheets ½¢ $\frac{1}{2}$ lb, served to send the jobbing prices up correspondingly in the New York market, where small lots of No. 27 Common Iron are now quoted at 2.70¢ @ 2.75¢ $\frac{1}{2}$ lb. Galvanized Sheets are also stronger, and quotations for small parcels are given by jobbers at 75 and 5 % @ 75 and 10 % off, according to size of order and conditions of delivery. The demand for Galvanized is quite active and mills are so full of work that they are not generally inclined to consider deliveries into the summer months at current prices. There is considerable talk of an early advance in the prices of Galvanized Sheets, and the idea seems to have more foundation than previous expectations in this direction.

Chicago Report.

Scrap.—The movement is heavier. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Malleable Cast.....	5.00	....
Stove Plate (free of burnt).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Pile Steel and Breaking Stock.....	4.00	....
No. 2, such as Shovels, Hoes, &c.....	3.00	....
Old Boilers—whole (Iron).....	3.00	....
" (Iron)—cut in single Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horsehoes.....	7.50	....
Copper Bottoms.....	6 ¢	....
Copper Clips and Heavy.....	7 ¢	....
Heavy Brass.....	6 ¢	....
Light Brass.....	3 ¢	....
Pipe Lead.....	2½ ¢	....
Tea Lead.....	2 ¢	....
Zinc.....	2½ ¢	....
Rubber.....	4 ¢	....

Anthracite.—Trade continues quiet. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.60	\$4.75
Milwaukee, Wis.....	4.60	4.75
Kansas City, Mo.....	7.50	7.95
Council Bluffs, Iowa.....	7.80	7.95
Lincoln, Neb.....	7.95	8.10
Sioux City, Iowa.....	7.80	7.95
Aberdeen, S. Dak.....	7.85	8.00
Dubuque, Iowa.....	5.90	6.05
Madison, Wis.....	6.10	6.25
St. Paul, Minn.....	7.10	7.25
Burlington, Iowa.....	6.10	6.25
Des Moines, Iowa.....	7.60	7.75
Davenport, Iowa.....	5.90	6.05
St. Joseph, Mo.....	7.80	7.95
Leavenworth, Kan.....	7.80	7.95
Omaha, Neb.....	7.80	7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Chayenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

A BETTER TONE characterizes the market, and the trade, with a fair volume of business, are anticipating a steady movement of goods, with a gradual increase in volume. While business is somewhat spasmodic, orders are coming in with a reasonable degree of freedom, but are for the most part small and carefully assorted, with a considerable proportion of reasonable goods. The indications, however, point to an increase in building, and there is accordingly an improved demand for Locks and Builders' Hardware generally. In the matter of prices there is little change. There is a disposition on the part of manufacturers in many leading lines to refrain from making concessions, and in some instances to withdraw some extreme prices. The improved tone of the market in raw material and the possibility of a further strengthening in prices at any time has some effect on the market and manufacturers of some heavy goods especially are hoping that it will be feasible to announce slightly advanced prices in the near future. The trade generally are watching the market closely, with a view to discovering the first indication of a return to better prices, but are not as a rule placing orders very freely in anticipation of such a turn. There is some irregularity in the market owing to the extent to which some leading jobbing houses are cutting prices in such lines as Nails, Barb Wire and Carriage and Machine Bolts, in the prices of which advances have recently been made by the manufacturers. In these lines the jobbers are underselling the makers of the goods and inducing a good deal of demoralization, which is to be regretted from its effect not only upon the lines in question but upon the tone of the market in general. Manufacturers and the trade generally are free in expressing their regret that the jobbers think it advisable to take this course, when if prices were maintained they would have an opportunity of realizing a satisfactory profit on their earlier purchases. There is little reason for complaint in regard to collections, which are somewhat sluggish, but on the whole the financial condition is fairly satisfactory.

Adices from Chicago.—The Shelf Hardware trade is continually growing; the volume of business last week was better than for any previous week this year. Some houses report having all the trade they can handle with present facilities. Others, however, while expressing gratification at the continuous improvement, say that they would be able to take in considerably more. While the volume of business has thus grown in the aggregate, the character of trade remains the same as before, running almost entirely to small lots, the exception being only in the case of new stocks, which are still pleasantly frequent. Hardware merchants through the country manifest their chronic conservatism in ordering goods. Low prices will not induce them

to anticipate their requirements. Even the low prices on staple articles which are prevalent have not induced them to lay in large stocks of such commodities. Jobbers are advising their correspondents that this is a good time to lay in stocks of miscellaneous Hardware, but only such as they are able to pay for, in view of the increasing cost of raw material. They are of the opinion that as the year advances the demand will grow larger and a sudden appreciation in value may at any time be expected. The business in seasonable goods is proceeding on the same lines as in straight Hardware. Merchants are only buying such quantities as they need from day to day or week to week. This condition of trade is expected to cause the usual spring demand to extend well into the summer. Tin Plates are very active and Roofing Plates are in much better demand than they have been, showing that building and repairing are now being well prosecuted. Collections are fair, but might be considerably better.

Notes on Prices.

Wire Nails.—The Wire Nail market is characterized by but little change in the volume of business since our last report. The trade are purchasing in moderate quantities, except in a few instances where some large orders have been placed. The mills are well occupied on orders and refer to the aggregate of business as satisfactory. Prices are not quite so strong as a week ago, some of the manufacturers making concessions on quotations previously current. The prices for small lots from store in New York are held at \$1.10 to \$1.15.

Advices from Chicago.—The market for Wire Nails is seriously demoralized. This is attributed more to jobbers than to manufacturers. Another cut has been made by one of the local jobbing houses, who offer carload lots or less than carload at 90 cents, f.o.b. cars Joliet. After this cut was made a competing house named 80 cents. These prices are below the rates recently made by manufacturers, and it is asserted that some of the jobbers are selling below cost. If this is the case they are remarkably generous to their customers. The manufacturers' prices are 95 cents, Chicago, or its equivalent for carloads and \$1 for small lots. Manufacturers report a number of large transactions during the past week in which sales were made covering shipments extending into the summer.

Cut Nails.—The Cut Nail market is in a better condition than Wire Nails, the prices adopted by the Eastern manufacturers being quite well maintained. The volume of business is fair, though not especially heavy. Quotations for small lots on dock or from store in New York, 90 cents

Advices from Chicago.—Manufacturers report a steady continuation of trade in this branch. Their orders run along in about the same volume weekly and are said to be satisfactory considering all circumstances. Jobbers quote small lots from stock at \$1.

Barb Wire.—There is a free movement of Barb Wire and there is little ground for complaint in regard to the volume of business. There is, however, a slight irregularity in the matter of prices and the tone of the market is not quite as strong as a week or two ago. Quotations are on the basis of

\$1.80 to \$1.85 for carload lots of Four-Point Galvanized at mill, but it is intimated that under special circumstances the lower figure can be slightly shaded. The effect of the cut prices announced by prominent jobbing houses has some influence in weakening the general tone of the market.

Advices from Chicago.—Manufacturers report a very heavy business in progress. The demand for which they have been long looking appears to be in full swing. Everybody desires shipments made very promptly, showing that they are out of stock. Notwithstanding the heavy trade which is now moving, the Chicago jobbers have inaugurated the same movement in Barb Wire which is introduced in Wire Nails. They are quoting f.o.b. cars, Joliet, in carload lots or less, \$1.50 for Painted Wire and \$1.85 for Galvanized. Other jobbers have named \$1.49 and \$1.84 in competition with the cut prices. Manufacturers state that their carload price is above the figures now named by the jobbers. The situation is perplexing, especially in view of the advance in steel billets and the stiffening in wire rods, which might be expected to have an effect on the finished product.

Nunmyr Nozzles.—H. F. Neumeier, Muncie, Pa., manufacturer of the Nunmyr Nozzles for garden, pump, factory, mill, furnace and fire hose, advises us that he has reduced the price on the Nozzles to \$40 per gross, net. The Nozzles are packed in neat, hinged wood boxes, 1 dozen in each. He states that owing to the large quantity of ½ inch Nozzles sold, and orders in hand, he has enlarged his manufacturing facilities.

Can Opener Carpet Tacks.—The Can Opener Carpet Tacks, manufactured by the Grand Crossing Tack Company, Grand Crossing, Chicago, an illustrated description of which appeared in our issue of last week, are sold to the trade at \$4 per gross net.

Dish Drainer.—The Magic Dish Drainer put on the market by the Leach Roaster & Baker Company, Paxton, Ill., was described in our issue of the 13th inst. The Drainer is sold to the trade at \$1.75, subject to a discount of 40 per cent.

Glass.—A weekly increase is reported in the amount of Glass shipped, though the volume of business is not yet large. The demand is not likely to be larger than the supply up to the time of the annual shut down, as it is estimated that about 13 weeks' supply of Glass is in manufacturers' hands, which will not probably be called for until jobbers' stocks are depleted. The better feeling which is pervading trade generally is likely to have a salutary effect upon the Glass market, and the belief is expressed that prices are destined to become firmer. A discount of 80 per cent. for single and 89 and 5 per cent. discount for double strength Glass, in car lots, seems to be fair representative quotations. It is reported that all quotations on Plate Glass have been withdrawn, and that prices will be announced by the Pittsburgh Plate Glass Company in a few days.

White Lead.—Jobbers have had a livelier market for Lead in Oil, and manufacturers report a brisker movement also. Upon the whole the distribution would appear to be fully up to the average for this season of the year. The movement in Dry Lead has also been somewhat freer. Prices stand as

they have been for some time past and generally quite steady.

Red Lead.—Foreign makes for future shipment are held at rather higher prices, but goods on the spot are moved at old rates. There is a fairly active business in both foreign and domestic.

Old Metals.—The demand is somewhat better, but so far no quotable improvement in prices has developed. Dealers' purchasing prices for moderate sized lots, New York delivery, are approximately as follows:

Heavy Copper.....	lb 7 ¢
Light and Tinned Copper.....	lb 6 ½ ¢
Heavy Brass.....	lb 4 ½ ¢
Light Brass.....	lb 3 ½ ¢
Lead.....	lb 2 ½ ¢
Tea Lead.....	lb 2 ½ ¢
Zinc.....	lb 10 ¢
No. 1 Pewter.....	lb 5 ½ ¢
No. 2 Pewter.....	lb 5 ½ ¢
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap..... gross ton.....	7.50 @ 8.50
Stove Plate Scrap..... gross ton.....	5.00
Burnt Iron..... gross ton.....	3.00

Old Rags, Paper, &c.—The general condition of the market is unchanged, and dealers' purchasing quotations do not vary from those made last week, namely:

No. 1 White Rags.....	lb 3 ¢ @ 3 ½ ¢
No. 2 White Rags.....	lb 2 ½ ¢ @ 2 ¾ ¢
Mixed Rags.....	lb 1 ½ ¢ @ 1 ¾ ¢
Blues and Sds.....	lb 1 ½ ¢ @ 1 ¾ ¢
Hard Sized White Shavings.....	lb 2 ½ ¢ @ 2 ¾ ¢
No. 1 White Book Shavings.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 2 White Book Shavings.....	lb 1 ½ ¢ @ 1 ¾ ¢
Light Book Shavings.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 1 Mixed Shavings.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 2 Mixed Shavings.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 1 Printed Books.....	lb 1 ½ ¢ @ 1 ¾ ¢
Ordinary Mixed Books.....	lb 1 ½ ¢ @ 1 ¾ ¢
Newspapers.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 1 Manila Paper.....	lb 2 ½ ¢ @ 2 ¾ ¢
No. 2 Manila Paper.....	lb 2 ½ ¢ @ 2 ¾ ¢
Bogus Paper.....	lb 1 ½ ¢ @ 1 ¾ ¢
Common Paper.....	lb 1 ½ ¢ @ 1 ¾ ¢
Straw Chips.....	lb 1 ½ ¢ @ 1 ¾ ¢
Binders' Clippings.....	lb 1 ½ ¢ @ 1 ¾ ¢
Jute Butts.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 1 Jute Bagging.....	lb 1 ½ ¢ @ 1 ¾ ¢
Mixed Bagging.....	lb 1 ½ ¢ @ 1 ¾ ¢
No. 2 Bagging.....	lb 1 ½ ¢ @ 1 ¾ ¢
Hemp Twine.....	lb 2 ¢ @ 2 ½ ¢
Manila Rope.....	lb 1 ½ ¢ @ 1 ¾ ¢
Jute Rope.....	lb 1 ½ ¢ @ 1 ¾ ¢
Mixed Rope.....	lb 1 ½ ¢ @ 1 ¾ ¢

Old Rubber.—An irregular market is reported. The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, f.b. 3 ¢ @ 3 ½ ¢
Rubber Shoes, carloads, delivered at factory, f.b. 4 ½ ¢ @ 4 ¾ ¢
Rubber Shoes, less than carloads, f.b. 4 ¢ @ 4 ½ ¢
White Wringer Rolls, f.b. 3 ½ ¢ @ 3 ¾ ¢
White Syringes, f.b. 3 ½ ¢ @ 3 ¾ ¢

THE D. R. & H. AUTOMATIC MFG. COMPANY of New York City have been chartered to manufacture automatic refrigerating and heating apparatus and machinery. The capital of the concern is placed at \$300,000, and the directors named are: David M. Demarest, Albert N. Romaine, E. C. Howell, E. W. Howell of New York City and T. L. Hume of Long Island City.

THE ADVERTISEMENT of the Troy Paint & Color Works, 677-679 River street, Troy, N. Y., directs attention to the American Seal Builders' and Roofers' Elastic Oil Cement for bedding slate and tile roofs, for vault lights, for metal roofs and for brick and stone fronts. These are some of the purposes of the cement, the application of which is graphically shown in the announcement.

THE METAL WORKER.

NEW YORK AND CHICAGO.

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NEW YORK.....98-102 Reade Street.
PHILADELPHIA.....220 South Fourth Street.
BOSTON.....146 Franklin Street.
PITTSBURGH.....Room 500 Hamilton Building.
CHICAGO.....59 Dearborn Street, cor. Randolph.
CINCINNATI.....Rooms 23-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....512 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 43 Cannon
street, London, England.

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A New England Trades School.

In another column will be found some interesting particulars relating to the trades school of the Springfield Industrial Institute of Springfield, Mass., which will afford gratification to those of our readers who are interested in the trade school movement in this country. Started last year in an unostentatious way, the Springfield school attained in its first season such a measure of success as to justify its managers in extending its next season's field of work very largely. The experience of this school is in line with that of all other similar institutions for trade education previously established in the East. These schools have proved uniformly successful wherever they have followed, as in this instance, the general plan embodied by the late Colonel Auchmuty in the now famous New York Trade School. By this system young men are helped to help themselves. Nothing is given for nothing, and the fees, without overburdening the pupils' resources, are placed at a sufficient height to make it an object for the student to get his money's worth of instruction in return. The provision of both day and night classes, whereby are reached not only the beginners in the trades, but also those already working at them for their daily bread, is another feature of the Auchmuty system which has, in its results, proved the wisdom and foresight of the originator of the modern American trade school.

Ash Bag System in New York City.

At the suggestion of Colonel Waring, Commissioner of Street Cleaning of New York City, the Board of Health has ordered the adoption of a new system of collecting ashes, upon which the Street Cleaning Department has been experimenting for the last two or three weeks. The householders in Thirty-

eight street, between Fourth and Sixth avenues, were persuaded to give the plan a trial. For this purpose, 150 canvas bags were furnished by the department, each bag containing about as much as an ordinary ash can. When placed in the house, this bag is dis- tended by the insertion of a light zinc or galvanized cylinder, similar to an ash can, but without bottom. When the bag has been filled with ashes, the cylinder is drawn cut by the collectors of the Street Cleaning Department, the top of the bag is closed tight and the bag is carried to a wagon. Another bag is left, into which the cylinder is slipped. By this process, no part of the ashes is permitted to fall on the ground, all flying of dust is prevented, and unsightly rows of ash barrels along the streets are done away with. Moreover, the bags can be piled up in the collecting wagon, increasing its capacity to nearly double, and the dropping of ashes from the wagon on its way to the dump is entirely obviated. The experiment was regarded by the householders concerned, and those who witnessed it, as an entirely successful demonstration of the efficiency of the system, and the Health Board has approved the general adoption of these bags. The Health Department has also issued stringent orders to householders, directing the separation of garbage and ashes. For the accommodation of garbage, an iron bucket with tight fitting lid, costing about the same as a galvanized ash can, has been recommended; and the use of this utensil will probably be rendered mandatory in future. By these means, it is evident that the collection and removal of garbage and ashes will be greatly facilitated, and the operation rendered far less objectionable than heretofore.

Ten-Cent Dinners.

Edward Atkinson, the distinguished economist, of Boston, has been recently exploiting his "Aladdin" oil lamp oven in the national capital. According to published accounts Mr. Atkinson entertained a distinguished company at dinner one evening last week in Washington, including three cabinet ministers, a foreign diplomatist and other persons, to the number of fourteen. His oven was placed on one side of the dining room; and, although an entire dinner had been cooking in it for some hours, it was said that no perceptible odors could be detected by the guests. The dinner furnished was a full one of seven courses, from fish to dessert, and it was voted an entire success by those who partook of it. The

entire dinner for fourteen persons was provided at a cost of ten cents for the fuel, supplied by an oil lamp; and its total cost is said to have reached a little over \$1.50. Mr. Atkinson undertook this entertainment with a view of demonstrating the fact that people can live a great deal cheaper than they do. Incidentally, of course, he wished to bring to notice the undoubted merits of his invention, the "Aladdin" oven, which he has for some years been endeavoring to present to the public. It is clear that he has invented a method of cooking of surprising simplicity and economy, the only fuel being a common lamp filled with kerosene oil, lighted and placed within the oven. The majority of housekeepers, however, are so wedded to old methods that it will take a little more than a "cabinet dinner," at ten cents a head, to convince them that they are spending far more on the actual costs of living than there is any necessity for. Mr. Atkinson's object lesson may not, however, be entirely thrown away. It is said that the Secretary of Agriculture, who was one of his guests, was so struck with the entertainment that he may institute a special investigation into the necessary cost of prepared food in this country, with the view of publishing the information gained.

Col. Carroll D. Wright, United States Commissioner of Labor, announces that he will issue in July the first number of the new Labor Bulletin authorized by Congress, the appropriation for the bulletin becoming available with the coming fiscal year. Colonel Wright, in the new publication, intends to adopt some of the best features of the labor bulletins issued by the governments of Great Britain, France, Russia and New Zealand, and will introduce new features which, he believes, will make the bulletin the best official publication of its kind in the world. He proposes to make original investigations on topics which, while of great interest, are not important enough to fill a volume of his annual report and to embody the results in the bulletin.

Five hundred garment workers employed in various sweat shops in St. Louis, Mo., inaugurated an entirely justifiable strike last week. They do not ask for higher wages, but demand that their employers provide for them clean shops in which to work, fresh air and proper sanitary conveniences.

The Standard Oil Company are about to remove their northwestern distributing plant from Chicago to a location on Lake Superior, between Duluth and Superior. They are also building a line of steamers specially constructed for oil transportation, which will be placed in service soon after the opening of navigation on the lakes.

THE LETTER BOX.

Folding Camp Equipments.

From F. M., Baltimore, Md.—In *The Metal Worker* of April 20 is an inquiry from "H. A. S.," Grangerville, Idaho,

had a call from some one who is thinking of a trip into the woods the coming summer. With regard to the bake oven I would say that a convenient one is illustrated in Fig. 1 of the sketches,

and C so as to fold. Two legs are required for holding the back in position, one of which is shown at E. The legs are secured to the back of oven as shown at F, a rivet being used so the leg can be turned out of the way when the oven is folded. In the front elevation is shown the position of ends when the oven is folded. The two ends are hinged to the top, as indicated at G H, and fold over, as indicated by H J' and

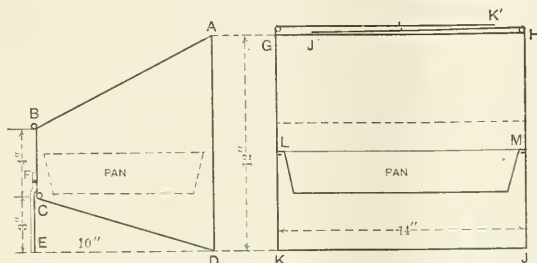


Fig. 1.—Folding Bake Oven.

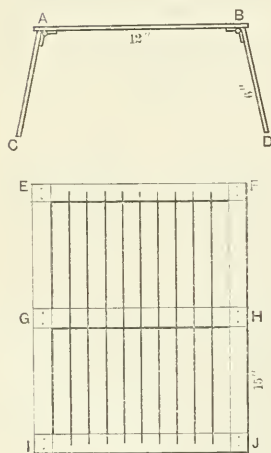


Fig. 2.—End Elevation and Plan of Folding Open Stove.

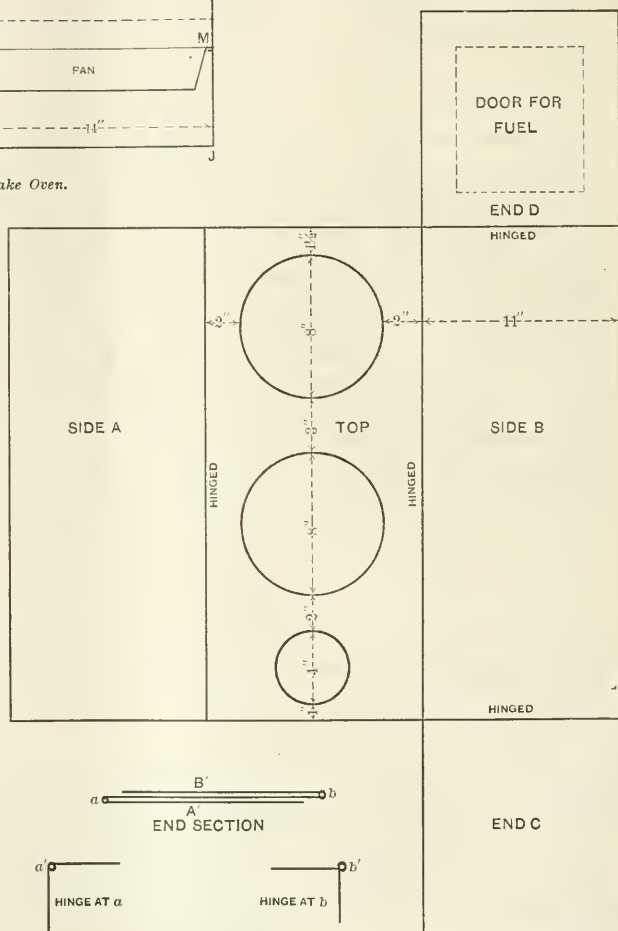


Fig. 3.—Various Views of a Folding Closed Stove.

FOLDING CAMP EQUIPMENTS.

relative to bake ovens and folding camp stoves which I will endeavor to answer. It is well known that these articles are requisite adjuncts of a camp outfit, and it is to be assumed, therefore, that the correspondent making the inquiry has

and although certain dimensions are given the oven can be made any size that may be desired, retaining, of course, the same relative proportions. Let A B C D represent the end elevation of the oven, which is hinged at B

G K'. For the purpose of holding the dripping pan in position, narrow cleats are riveted to the ends at L M, and by having the ends of the pan flanged it slips on the cleats, as shown. The end H J is first folded over, as indicated by

H J', and that the end G K should fold over and be level the end of top is bent up about $\frac{1}{4}$ inch, as shown at G, so the end G K will lay as indicated by G K'. The folding ends can be secured to the bottom by riveting loops on each and running a wire through. The hinges are made in the usual manner, by notching the edges before turning for wire. After wiring, strips of tin are passed

Another form of folding stove is shown in Figs. 4 to 6, and can be made the size indicated in Fig. 3. In Fig. 4 is presented an end elevation or section. The top and bottom edges of sides A and B are bent out at right angles, and the side edges of top and bottom are turned over so as to hold the sides. In the side elevation, Fig. 5, end D has its top and bottom edges turned out to re-

cumulated in 10 days' time and when snow covered the ground. My residence is in an open lot remote from any factories, and hence the air is less laden with soot than in more compactly built districts or in the vicinity of factories. It is a self evident fact that if a furnace is properly put in and properly managed there can be very little, if any, dirt come from the furnace, but it is brought

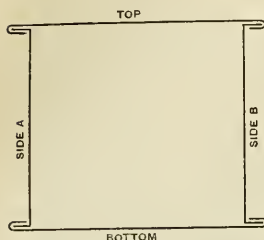


Fig. 4.—End Elevation of Another Form of Folding Stove.

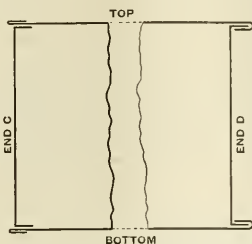


Fig. 5.—Side Elevation.

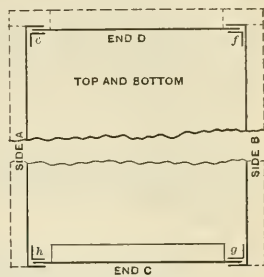


Fig. 6.—Plan View.

FOLDING CAMP EQUIPMENTS.

through and bent over, when the strips are riveted to adjoining parts.

A form of open folding stove or broiler is shown in Fig. 2. In the end elevation A B represents the top of the stove, and C A, B D the legs, which fold, as indicated by the hinges at A and B. The frame of stove is indicated in plan by E F J I, and is formed of strips of band iron, riveted at the corners. A brace or strip, as G H, can be used if desired. Holes are made in E F and I J, through which wires are passed and the ends bent over on the under side, thus forming a level top. This form of stove is to be used over an open fire, is adapted to broiling, or any cooking utensils can be placed on the top. Legs can be fastened at E F G H I J, as shown in the end elevation.

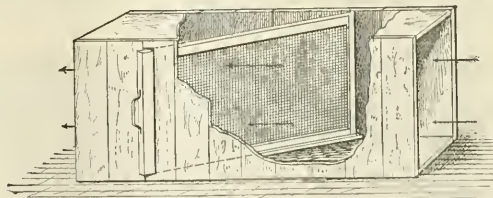
A form of folding stove is shown in Fig. 3, and, as indicated, the top is 12 x 27 $\frac{1}{2}$ inches and the stove is 11 inches in height. There are two 8 inch gridle holes and an opening for a 4 inch smoke pipe in the top. The smoke pipe can be made tapering so the joints will telescope, and a flange can be riveted about the end that joins the stove so it will slip in only a short distance. The edges of the openings can be wired and the covers made in a manner similar to pall covers, having flat tops and rings. Sides A and B are hinged to the top and ends C and D to the ends of side B. To close the stove side A is folded under the top, the hinges being arranged as shown at a and a'. Side B is then folded on to the top, the hinges being made as shown at b and b'. The ends then fold on side B, the hinges being arranged as at a and a'. The usual door and draft damper are to be provided in end D. All edges are to be wired. If desired the top can be made about 1 inch longer than indicated, so as to project over the two ends. By making the opening for the smoke pipe oblong the length of the stove can be reduced about 2 inches. Camp stoves can be without a bottom, being set on the ground, but if a bottom is desired it can be made by turning the edges of a piece of iron so the stove will set in same. Legs can be added, as directed for Fig. 2.

ceive the ends of top and bottom, which are turned over. End C has its top and bottom edges turned in, so as to allow the top and bottom to be slipped over them. In the plan, Fig. 6, it is shown that the sides have their ends bent in, and flanges riveted on, as at e f g h, so as to hold the ends C and D in position. It is also shown that sides A B and end D have the top and bottom flanges bent out, as in Figs. 4 and 5. Legs can be applied, as shown in Fig. 2. As this form of stove is made without hinges, turned edges only being used, less labor is required in its construction than for the one shown in Fig. 3.

Common Sense Dust Inhibitor.

From HENSON ROBINSON, Springfield, Ill.—In *The Metal Worker* of February 2 your correspondent "J. L." of Pittsburgh requests information as to draft arresters for cold air ducts. I am pleased to relate my experience, believing I have the best article of the kind in the

into the house on the dirt and soot laden atmosphere from our own and neighbors' chimneys. Hence, if we can sift, filter and purify, as it were, the air, take from it the soot and dust before it reaches the furnace, we have overcome the greatest and perhaps the only drawback to hot air heating; also prevent damage to carpets, curtains, pictures, furniture, bric-a-brac, walls, &c. (no small tax), besides the annoyance and discomfort. To make an appliance available for general use in cold air ducts, especially where unskilled hands have the management of it, it must be simple to comprehend, removable for cleaning, durable and inexpensive and readily adjustable to any air duct. All these points are covered, I think, by the Common Sense Dust Inhibitor, a picture of which is shown, giving a perspective view of same, a part of the top and side of the air duct being broken away so as to show the position of the inhibitor within the air duct. The inhibitor is inclined toward the outer end of the air duct at an angle



Common Sense Dust Inhibitor.

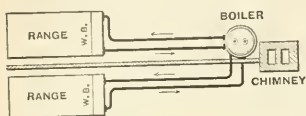
market. About one year ago I purchased from J. La Forest King of this city what he calls a Common Sense Dust Inhibitor for my furnace, he estimating that it would prevent from eight-tenths to nine-tenths of the soot and dust in the air passing into the house. My experience with it has proven his estimate to be well founded. It accomplishes the desired result. The amount of dust and soot it collects is marvelous. The last time I cleaned it I got a cup full of fine black soot, smut, which ac-

of about 30°, thus giving less resistance to the air and a larger superficial area of mesh to arrest the soot and less vibration than if set vertically. It can be removed and cleaned and returned to place in three minutes, and there is nothing to get out of order. The inventor has adopted a hairy fabric for the webbing which not only arrests such pieces of soot as will not pass through the meshes, but the finer particles of dust and soot are caught on the hairs that point in all directions

from the fabric. This to my mind is a most important feature. With proper usage a web should last two seasons. When worn out the mode of attaching it to the frame is so simple that a new web can readily be inserted. I trust this will prove of interest to your readers.

Two Water Backs and One Boiler.

From E. A. W., West Burke, Vt.—Which is the better way of connecting two ranges with one boiler—should there be a separate pipe from the water back in each range to the boiler, as



Two Water Backs and One Boiler.—Fig. 1.—Separate Boiler Connections.

shown in Fig. 1, or will they give good service if connected at the boiler with a "Y," as shown in Fig. 2? I have two ranges, one on either side of a partition, with a boiler between them, and I purpose running a $\frac{3}{4}$ -inch pipe from the water back to a $1\frac{1}{4}$ -inch Y, which I shall connect at the boiler. In either case the boiler will be set close to the ranges.

Note.—We shall be glad to have our readers comment on this question. It will be more expensive to make separate

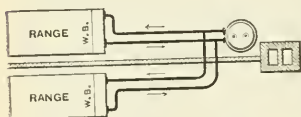


Fig. 2.—Branch Connection.

connections from each water back to the boiler, and it would seem as if there would be no objection to using the $\frac{3}{4}$ -inch pipe from the water back to the Y on a $1\frac{1}{4}$ -inch pipe to the side and bottom of the boiler or a 1-inch pipe, as it is probable that a larger pipe could not be used in an ordinary boiler.

A Balky Furnace.

From AUF WIEDERSEHN, Watertown, N. Y.—In answer to communication from "J. H. W.," Bridgeport, Conn., whose letter appears in *The Metal Worker*, April 20, I want to say, we often hear the remark "There is nothing so whimsical as a woman," but after 30 years of experience at furnace work I have come to the conclusion that there is nothing so whimsical as a furnace. The truth of the matter is, they have got to be humored. A great many house owners consider them a necessary evil. They want all the comforts derived from a good heating apparatus, but the machine itself is an incumbrance that must be put in a part of the cellar or basement, that they have no other earthly use for. It must be crowded into a corner, or away off to one side where it will be entirely out of the way for something more important. Now! What is there of more importance in a cellar or basement than a good fur-

nace? Why it is one of most important factors that go toward making a comfortable, pleasant, happy home. It should be given the place of honor in the best of basements or cellars. In locating furnaces men have come to me and said, "Oh, I can't have it stand here, it will be right in the way of my wine cellar." Another, "I cannot have it here, this is the place for my apple barrels;" in fact they all seem to think that the furnace can stand "anywhere, anywhere out of the way." Now, in regard to this particular case given by the gentleman from Bridgeport, Conn. Taking for granted that he does not wish to place an additional furnace under that part of the house which does not warm up, nor use hot water apparatus connected with his hot air furnace, then there are but two remedies left him—namely, let the furnace stand where it is and turn the house right around so as to face N. E. instead of S. W. or place the furnace almost exactly in relation to the western corner of the house that it now occupies, to the eastern corner. There is absolutely nothing else to be done, and any amount of doctoring and experimenting will not change this ultimatum.

Tin and Gravel Roofs.

From W. C. F., St. Louis.—Having seen several articles in *The Metal Worker* intended to show the superiority of gravel roof and others of the same class over tin roofs, and in view of the fact that anything in support of the durability of metal roofs will be likely to win the interest of your readers, I desire to rise in my place and relate a little of my own experience. I was called upon recently to examine some copper gutters that I made and placed in position in 1841, and finding them in good condition I was curious to go a few doors north, to 518 North Main street, to examine a tin roof that I worked on for O. D. Filley in the same year. I found that with the exception of a few nail holes and a few rusty spots (for I am sure the roof had not been painted in ten years) it was in good condition, and I undertake to say that with two days' repairs and a light coat of paint it is good for another ten years. Now, if your contributor who is so loud in his recommendation of gravel roofs should visit our city he can see roofs, not to mention the roof above referred to, that are doing good service at the age of 37 years.

Dripping Pan Corners.

From A. C., Milwaukee.—When one is required to make a dripping pan of certain dimensions one of the problems presented is how to lay off the corners in such a manner that, when folded over, the edges will lie parallel with the wire. This may be a simple operation to many, and perhaps those who have a convenient method will kindly furnish a description of it for publication in *The Metal Worker*.

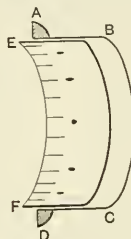
A Peculiar Furnace Experience.

From S. J. P., Pittsburg, Pa.—Answering "S. C.," Cleveland, Ohio, in *The Metal Worker* of April 13, I would say that my idea of reducing the size of pipe by using a funnel shaped box is not alone to reduce the capacity, but at the same time to give free access for the cooler air to enter through the large register. The valves in the

register have nothing to do with this, as they are intended to be open at all times. I am satisfied if "S. C." will try my plan it will work, especially if the grate in the room is closed. I have drawn cold air down from the third floor of a building in this way and have no register above the first floor.

How to Put Collars in Furnaces.

From W. B., Milwaukee.—In answer to "W. H. H.," Washington, D. C., in *The Metal Worker*, April 6, who wishes to be informed of an easy way to put collars in hot air furnaces when a flaring top (or bonnet) is used and the collars are taken from the side, the usual method is as follows: In the accompanying engraving A B C D represents a section of the galvanized iron collar, which is cut so as to fit the bonnet and give the desired angle. A flange is turned out, as indicated by A D. Strips of tin are then riveted in the collar. If the rivet holes are punched and the rivets pounded down without using the rivet set, a smooth outer surface is presented for the heating pipe to slip over. After the strips of tin are riveted in the collar (no pattern being used), the outer edge is trimmed so as to project about $\frac{1}{4}$ inch. The tin is then notched, as shown. The collar is then placed against the bonnet and marked.



How to Put Collars in Furnaces.

The opening is then made, when the tin is slipped through and the notched edges bent over. This holds the collar firmly in position, as the flange A D is outside of the bonnet and the notched edges inside. By this method it is necessary to make the entire collar in the shop. Sometimes it is convenient to adjust the collar at the job where a machine for turning the flange and a riveting stake are conspicuous by their absence. Under such circumstances the "plain" collar is made in the shop and of any desired length. Arriving at the job the collar is trimmed so as to fit against the bonnet and give the required angle. The next step is to notch the trimmed end, as indicated by E F. Alternate notches are then bent out at right angles to the collar, thus forming a substitute flange. The collar is then attached to the bonnet, as directed above. By holding a hammer (or brick) inside of the bonnet the outer edges can be pounded down so as to lie in an orderly manner.

The New England streams and rivers rose last week to a height greater than has been reached in the last 25 years. Scores of mills in the great manufacturing centers were forced to stop work until the inundation caused by the swollen rivers subsided. Much damage was done to houses and factories, as well as bridges and railroad tracks, by the freshet.

PLUMBING and GAS FITTING.

A Word for the Plumber.

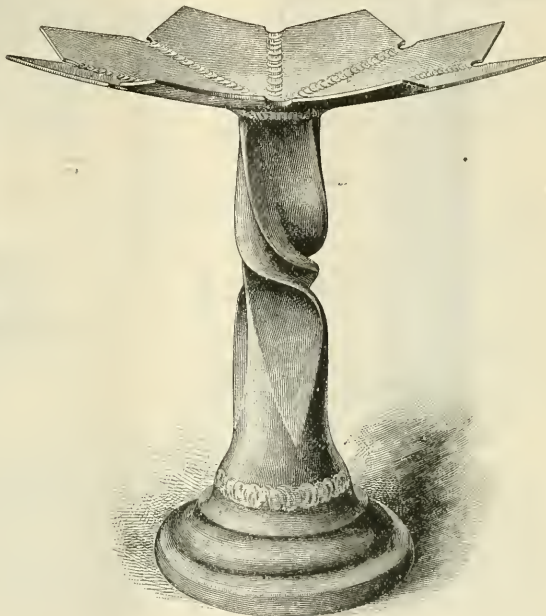
From SAMUEL A. HEINS, *Rondout, N. Y.*—I would like to say a few words through your valuable paper for the benefit of the public and the first class plumber. As a rule, the plumber is a much abused man and his profession one that the public is slow to appreciate, and yet it is one of the most important of all professions. A good plumber ought to rank with the engineer, the architect or other professional man. He is properly a home physician, and when we reflect how much is expected of him it will be seen that no mere artisan could fill the bill. Most ordinary mechanics nowadays require only enough brains to put together machine made work, and they learn to do only one thing fairly well. A good plumber must think, plan and study constantly. He must work with his own hands and also exercise his ingenuity and common sense to overcome difficulties. No two jobs are ever exactly alike. In making repairs, and especially in ferreting out defects and blunders in the workmanship of others, he must use real sagacity. No mere patcher or solder splasher could do this. The consequences of his labor may be of vital importance, and when this fact is fairly recognized it will be seen that the plumber, instead of being the foe, is the guardian of the household. He supplements the architect and builder, and anticipates the physician by removing the cause of diseases which are liable to occur and are occurring every day where bad jobs of plumbing are found. It should be remembered that plumbing, in its present significance, is almost a new trade. It dates from the introduction of the water carriage system a few years back, the Croton Aqueduct having been completed as late as 1842. The art, therefore, is still in its infancy and but just being accredited with its true importance. In Great Britain, especially Scotland, the plumber's position is recognized. He is known there as a sanitary engineer, and, being trusted and encouraged, he accomplishes far more than in this country. Our people, however, are at last becoming alive to the danger which threatens their welfare, and which can only be removed by the aid of the heretofore much despised plumber. He can be relied upon to largely prevent those terrible scourges, diphtheria, cholera, typhoid fever, small-pox, &c. A board of health and sanitary regulations will not suffice if capable plumbers are frowned upon and discouraged. If the public desire good sanitary work, why not get it in this as in any other line of business. There are quacks and frauds in every occupation, but by using due discretion competent practitioners can always be found. Many intelligent plumbers say that they dislike to suggest to their customers what they deem indispensable changes in their water service or drainage systems for fear their motives would be misconstrued and that it would be said they were influenced by self interest. This is unfair and injures both plumber and householder. Besides, why should

wrong motives be suspected in the case of a plumber any more than that of a lawyer, architect or physician? Certainly there are as honorable men in the plumbing business as in any profession.

Few persons appreciate how much mechanical skill is required in plumbing. Really skillful plumbers are not numerous and their hands are usually their best assistants, yet it is surprising what results are accomplished with them. Working in corners, in dark places behind boilers and in cramped positions, a good plumber will do as

disease induced by reason of defective plumbing. You hear of cases every day in large cities that are not working under a proper sanitary system.

I would recommend that no upright, ventilation or sewerage pipes be connected with a quarter bend of terra cotta pipe. I have seen a number of times the terra cotta bend sink into the ground and the refuse from the water closet overflow and the ground become impregnated with the deadly poisonous matter, and also the joints become leaky, and whenever this occurs look



Example of Lead Burning.

well, apparently, as if he had every convenience and ample elbow room. Few workmen in other trades have to overcome like obstacles. The carpenters, plasterers, masons and smiths meet with no such difficulties, and yet many persons, without reflection, denounce the plumber as belonging to an inferior class instead of ranking him where he properly belongs, among the best artisans. The householders are just finding out that the conscientious, competent plumbers—I mean men who have served an apprenticeship at the business and not mere joint wipers—do not deserve the abuse that so often has been heaped upon them by those who are ignorant of the amount of brains as well as brawn necessary to properly construct a plumbing system. The plumber is as important, if not more so, than the physician, for his work if well done prevents the disease which, when once contracted, the physician cannot always cure. I have seen as many as six persons in one family stricken down with

out for zymotic diseases. In the last seven years I have made 172 inspections in the cities of Pittsburgh, Pa.; Fort Wayne, Ind., Chicago, and different cities in the South, and I have seen as high as three deaths in one family on account of bad plumbing work.

Example of Lead Burning.

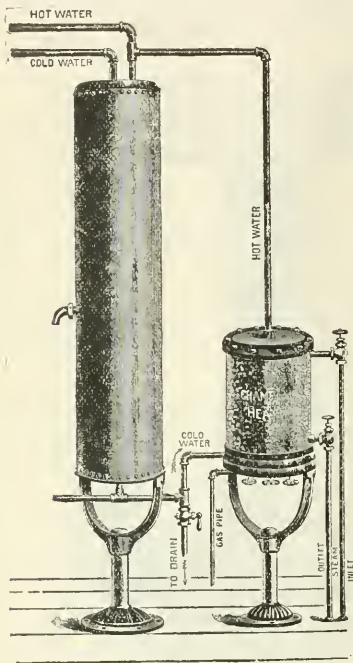
A piece of the handicraft of T. B. Walmsley, 214 West Thirty-second street, New York, instructor in lead burning at the New York Trades School, is shown in the accompanying illustration. The card receiver has a base beaten up from a piece of 3 pound sheet lead. The stem is made from a piece of 1½-inch waste pipe, and the receiver from pieces of 3-pound sheet lead, mitted as shown. The base was beaten up over a mold. The stem was beaten square, and then heated and twisted. The different parts were joined together by lead burning, using illuminating gas in connection with a com-

pound blow pipe of which Mr. Walsley is the inventor. This method of lead burning was made a feature of the course this year. In addition to instructing the class thoroughly in lead burning, by means of the oxy-hydrogen machine, Mr. Walsley gave the class instruction in the use of illuminating gas for lead burning and its application for daily use in practical plumbing. He has carried a hose and a blow pipe as a part of his kit for a number of years and has found it indispensable in his practice. This method can be used wherever gas can be had for lengthening traps, for joining waste pipes where they are exposed to view, for burning the vent pipe in the top of the trap and the seams in the safes and wastes, and an immense amount of

The Champion Water Heater.

The R. J. Dillon Company, 2 and 4 South Canal street, Chicago, have just brought out a water heater having some specially interesting features. It is intended to heat water for domestic purposes, and is therefore arranged to be connected with kitchen boilers. To meet all requirements it is so constructed that the water can be heated by gas or gasoline, or a connection can be made with a steam or hot water boiler, and the water thus heated by the house heating plant at no additional expense for fuel. Owners of houses heated by steam or hot water will find this apparatus specially adapted to their purposes. Illustrations are herewith given to show the form of the Champion

with heavy asbestos, thus retaining as much heat as possible, and utilizing it where most required for heating the water. The manufacturers state that there is no opportunity for the contamination of the water by gases. It will be observed that the hot water delivery is attached to the top of the tank in Fig. 1, so that hot water can be drawn from the heater, if desired, without heating the contents of the tank or boiler, but of course when water ceases to be drawn the circulation through the tank commences. By this arrangement hot water can be drawn within a very few minutes after turning on steam or lighting the burner. The maximum amount of gas consumed by this burner is placed at 35 feet for manufactured gas and 40 feet for natural gas per hour.



The Champion Water Heater.—Fig. 1.—Heater Connected with Kitchen Boiler.

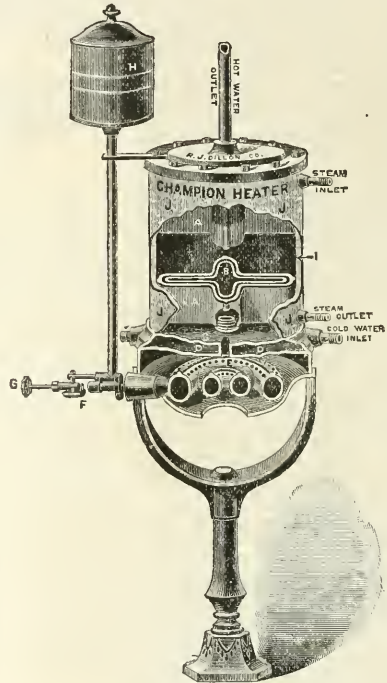


Fig. 2.—Heater Using Gasoline.

time and solder can be saved. After a good, strong seam has been burned the surplus lead may be filed off, and, when smoothly finished, to any but an experienced eye it would be impossible to locate the connection between the two parts. Mr. Walsley also uses the blow pipe for wiping joints, finding it particularly useful for wiping when the joint is to be made under disadvantageous circumstances. He looks on this method of lead burning as one that will find great favor when the plumber becomes familiar with it. Proficiency in the work was readily acquired by his pupils, and in Mr. Walsley's opinion this character of lead burning is destined to be widely used.

W. B. BACON, New Castle, Pa., has removed his plumbing establishment from Apple Alley to East street, opposite the City Building.

heater and the principle on which it is constructed. In Fig. 1 will be seen the manner in which the heater is placed in a kitchen, connected both with the steam plant in the basement and with the kitchen boiler, being equipped at the same time with gas burners so that gas can be used when the steam heating plant is not running. The connections are plainly indicated on the cut, so that no further explanation is necessary on this point. In Fig. 2 a sectional illustration of the heater is given, showing a gasoline heating attachment combined with steam heating connection. The radiator in which steam or hot water passes for heating the water is shown in the center of the heater. It is a one-piece casting of gray iron, so that there is no danger of leakage, while its character insures it from any possibility of wear. The shell of the heater is surrounded by a sheet steel jacket lined

The heater is also made without the gas burner so that it can be operated exclusively by steam or hot water from the house heating plant.

KIRTLY BROTHERS, Kansas City, Mo., issue a neat circular relating to their water works operated by compressed air. This system, which has been described in *The Metal Worker*, consists in compressing air in a tank under ground, and by that means forcing the water from an adjacent well or cistern to any height desired. It has, we believe, proved very successful in operation, and the numerous testimonials written from various parts of the country express the highest appreciation of the system. The apparatus is illustrated and fully described in the circular, and in addition reference is made to windmills and some other goods.

The Phillips Circulating Gas Water Heater.

We show in the accompanying illustration a sectional view of the Phillips circulating gas water heater put on the market by the Phillips Gas Stove Works, 92 East Eighth street, Cincinnati, Ohio. It is used in connection with a circulating boiler and, as the cut indicates, it can be used alone or in connection with the water back of the coal range, so that either may be used independent of the other or both at the same time, as desired. The heater can be placed directly under the boiler, but should the boiler be set on a stand the heater can be placed at the side of the boiler. The position of the heater in reference to the boiler will not interfere with its work, provided it

The connection is arranged so that instead of a closet being useless after the earthen horn is broken it can be repaired at once by using this connection, and at a very small expense.

Henry McShane Mfg. Company.

The plumbing supply house of the Henry McShane Mfg. Company, 625-627 Sixth avenue, New York, has many attractions for the plumber besides its handsome showroom. The showroom, with its row of lavatories, its variety of water closets, its display of different kinds of tiling both for floors and walls, and its two handsome bathrooms will give pleasure to any one examining it. But the plumber who is intent on business and brimful of orders will be

bath boilers comprises plain and galvanized iron boilers for use upright or horizontal across the top of ranges, and also a line of copper boilers. On the third floor they have a variety of sanitary earthenware—closets, urinals and lavatories—with the wooden seats and tanks in the different kinds of wood and finish that are required in a modern bathroom. The back portion of this floor is used as a brass finishing shop. If a plumber requires a specially bent flush pipe or an unusual style of waste and overflow, or any of the many special goods required in modern plumbing, they can be turned out at short notice in the shop. The fourth floor is used entirely for enameled baths, one portion being used for a paint shop, where an assortment of tubs finished in white enameled paint, some plain, some with gold bands, and others with special decoration, are prepared so that an order can be filled without delay. The amount of stock that is carried in each of the different departments can be told by a special system in the office. Manager Murray has been largely assisted in the arrangement of the establishment and in inaugurating the system followed by Richard H. Maguire, who is well known to the trade throughout New York and New England by his frequent visits among them.

Convention Gossip.

It has been decided to make the Continental Hotel, Ninth and Chestnut streets, Philadelphia, the headquarters of the delegates to the convention of the National Association of Master Plumbers to be held in that city. The greater portion of the second floor front of the hotel has already been reserved. The business proceedings will take place in the Chestnut Street Opera House, which is less than two blocks from the hotel.

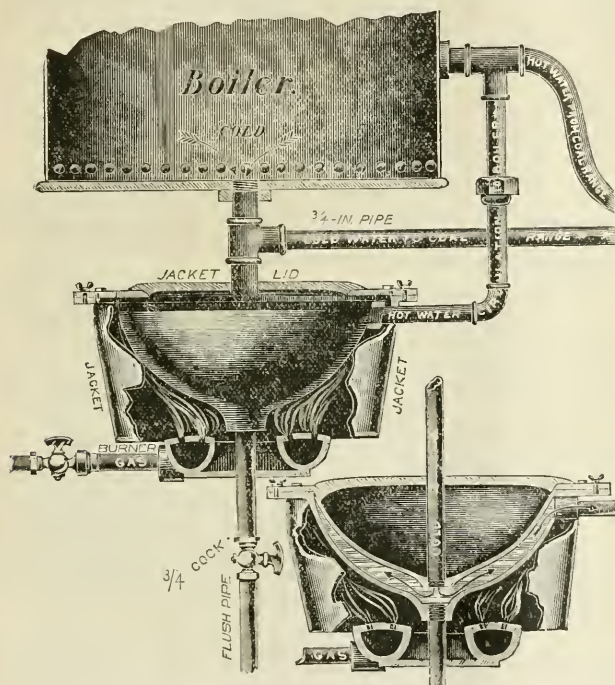
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The Philadelphia master plumbers have been doing some effective committee work during the past few weeks, and their determination to leave nothing undone which will enhance the comfort of the visiting delegates has already shown itself in the arrangements concluded. The Continental Hotel is one of the most central hotels and the Chestnut Street Opera House one of the largest theaters in the city of Philadelphia.

* *

Convention week will be a busy one in Philadelphia. Besides being the city selected for the conventions of the plumbers and steam fitters it has also been selected for the convention of the International League of Press Clubs, which assembles on June 11, and which will be attended by prominent newspaper men from all over the land.

EXCELSIOR BRASS WORKS, Dubuque, Iowa, have added to their line of brass goods a full line of plumbers' and gas and steam fitters' supplies. They will carry a complete stock in these lines and sell direct to the trade. They announce that they will handle nothing but such goods as they can guarantee to be first class in every respect. The brass goods they manufacture they have been selling to the largest and best jobbers in the country and their products have always given satisfaction.



The Phillips Circulating Gas Water Heater.

be placed properly below the bottom line of the boiler. The heat is furnished by a powerful atmospheric burner placed directly under the bowl of the heater, surrounded by a casing which prevents the flame from being affected by drafts of air and causes the heat to be evenly and quickly distributed to the whole surface of the heater, utilizing the value of fuel consumed. The heater provides for 3/4 inch flush pipe at the bottom so that it can be easily and frequently flushed and kept clean. The heaters are made in two patterns. Heater B is made of cast iron and C of cast brass and are tested to a pressure of 150 pounds. These heaters are largely in use and are, we understand, giving perfect satisfaction. They can be easily attached to any boiler and are economical in operation.

INSPECTOR OF PLUMBING A. M. Mann, Dunkirk, N. Y., has invented a connection for repairing broken closets.

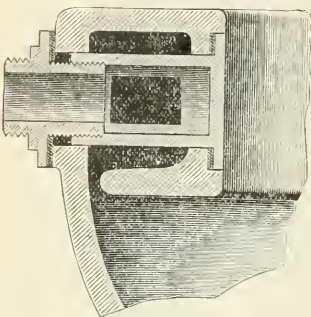
more attracted to the house by a visit to all its departments. In the cellar a complete line of wrought and cast iron pipe of different thicknesses is carried, with all of the soil pipe fittings that have been found useful in drainage. On the first floor are the showrooms on one side and across the back and the shipping office on the other, back of which is a large space systematically fitted up with shelves and bins stored with a variety of handsome brass goods of the very best quality. Strong claims are made by the house for the character of metal and workmanship of their bibbs, faucets and general line of brass goods. In addition to this line sufficient space is found for carrying a complete line of fittings for wrought iron pipe in malleable and cast iron, plain and galvanized. The second floor of the building is used for an assembly of goods preparatory to their shipment, and for the storage of iron sinks, tanks, boiler stands and bath boilers. Their line of

Maine Plumbers.

John B. Smith, Lewiston, Me., State vice-president of the National Association of Master Plumbers for Maine, accompanied by R. J. Donnelly of Portsmouth, N. H., has been making a trip through his State organizing master plumbers' associations. At Portland and vicinity an association was formed with James Miller president and W. E. O'Connell secretary. An association was formed for Augusta and vicinity with W. Willey of Gardner as president and J. H. Cogan as secretary. At Bangor and vicinity the association formed elected Leighton Davenport as president. A meeting will be called early in May for the formation of a State association.

Kelly's Urinal Connection.

An improvement in couplings is here, with illustrated which is intended to



Kelly's Urinal Connection.

overcome the annoying breakages in earthenware projections on water closets and urinals. With its use no projections are necessary. It has just been patented by Thos. Kelly & Bros., 124 Franklin street, Chicago. They are prepared to fill orders for earthenware of any shape with this connection.

Newell-Booth Company, Limited.

The organization of the Newell-Booth Company, Limited, a new plumbing supply house located at the southeast corner of Broad and Buttonwood streets, Philadelphia, was noted in these columns some time ago. We take pleasure, however, in making some other reference to the progress of the new concern and the principal persons composing it, who, as will be noticed, are men of long experience in the trade and particularly well known in plumbing circles. This new plumbers' supply house has taken its place among the older houses in that city so quietly and modestly that it is now, after only three months' preparation, recognized as the full fledged and aggressive competitor of any like establishment in the East. The trade will note in its title two names which represent probably the widest practical experience in the business possessed by any of the younger men of to-day in this line, each contributing to the enterprise a knowledge acquired through more than 20 years' continuous service at the lathe and in the salesroom. William H. Newell's initiation into the mysteries of the business took place in 1873, when he entered the service of Cooper, Jones & Cadbury as an appren-

tice. He worked at the trade in Philadelphia until 1883, when he went to Haydenville, Mass., as foreman of the finishing shop of the Hayden Company. He returned to Philadelphia in 1886 to take charge of Cooper, Jones & Cadbury's shops and remained there until a year ago. He is thoroughly familiar with every detail of the work, and is the originator of many of the appliances brought into requisition through the gradual development of a sanitary system of plumbing.

A. T. Booth entered the service of Cooper, Jones & Cadbury in 1877, and left the first of the year to engage in this new enterprise. He has not only a practical knowledge of every device made or used in a brass shop, but has also to an eminent degree the faculty of placing his wares on the market. His thorough knowledge of the requirements of the trade enables him to almost anticipate the wants of the perplexed plumber, and his suggestions have in countless instances wreathed in smiles the careworn faces of his customers. Starting as they do in the immediate neighborhood where they have so long carried on the business for others, and with a capital sufficient to permit of the untrammelled exercise of their ingenuity, they begin for themselves with a trade already established, and there is about their establishment, embracing as it does foundry, finishing shop, salesroom and showroom, an energy and completeness which assure its success.

Any mention of the Newell-Booth Company, Limited, would be incomplete without reference to at least two of their valued employees, who in their way are as well known as the principals. Everybody in Philadelphia supply circles knows James G. Scott, who has a quiet way of absorbing knowledge and an exceedingly easy manner of doing difficult things, as if to say: "I do this every morning before breakfast just by way of getting awake." Mr. Scott is familiarly and affectionately known as "Jim," and is said to be particularly strong with the German-town trade. He speaks German in several dialects and likewise has a smattering of pure Irish. Mr. Scott's long residence in that aristocratic suburb, Germantown, has given him a tone which is the envy of his less favored associates. However, Jim is democracy personified, and he has often been known to play pool at 1 cent a cue. The trade will recall Jim's early struggles with the ivories, and the writer can bear testimony to the accuracy of his shots, particularly when he has his eye on a level with the table. Next to his all round knowledge and ability Mr. Scott's unfailing amiability stands out prominently. Another of the old guard, though yet young in years, is "Billy Quinn," whose familiarity with iron pipe and fittings is something wonderful. Billy was also connected in the old days with Cooper, Jones & Cadbury, and if memory serves used to carry the bass with that famous quartet consisting of Scott, Dellow, Ensign and Quinn, with "Bucky" Irven as accompanist on the cornet. Mr. Quinn has charge of the stock room of the new concern and a better man for the position could not be found.

THE MAPLE CITY PLUMBING & HEATING COMPANY have been incorporated, at Monmouth, Ill., with a capital stock of \$2000. The incorporators are C. L. Barnes, Martha M. Barnes and A. L. Knott.

TRAPS AND VENTS.

THE MIDGLEY & SONS SUPPLY COMPANY have been incorporated in Salt Lake City, Utah, and will engage in the purchase and sale of plumbing, water works and mining supplies. The capital stock is fixed at \$30,000. Joshua Midgley is president, John G. Midgley vice-president and Henry Greene secretary and treasurer. These, in addition to David Midgley, William G. Bywater and William Green, constitute the Board of Directors.

A. L. HOBBS, secretary and superintendent of the Raton Water Works Company, Raton, N. M., has purchased the plumbing, tin and sheet iron establishment of T. F. Murphy.

FRANK WALTHER, West Bay City, Mich., has sold his plumbing stock to George H. Burge, who has taken possession of the former's old stand on Midland street.

E. WASHBURN, Orange, Mass., has bought of the Washburn estate the store and plumbing business left by his father, and will carry on the same in the south half of the store on Water street.

WILLIS E. HOPE, Woonsocket, R. I., who has been in the employ of Charles W. Talcott for the past twelve years, has opened a plumbing and steam and gas fitting establishment at 65 Main street.

CUNNINGHAM & STOWE, Marion, Ohio, have moved their plumbing establishment from the Centennial building to the Kling room on the opposite side of the street.

E. C. MCKEE has opened a plumbing and gas fitting establishment at 1626 New Fourth street, Harrisburg, Pa.

JOHN HICKMAN, Paterson, N. J., State vice president of the National Association of Master Plumbers for New Jersey, recently met with a serious accident while driving a horse that he had hired. The horse became unruly, kicking Mr. Hickman, injuring his leg and breaking one of his hands. Being at some distance from where proper treatment could be secured, the injury has proven dangerous.

STARK & DERWALD, 1339 North Halsted street, and Peter B. McGary, 461 Grand avenue, have lately started plumbing establishments in Chicago.

THE KELLEY & JONES COMPANY of Greensburg, Pa., manufacturers of plumbers' and steam fitters' supplies, on account of the demand for larger fittings, &c., have been obliged to add power cranes to their large foundry, and have decided to adopt the Ridgway steam hydraulic crane, the order for which has been placed with Cratig Ridgway & Son, Coatesville.

WE ARE INFORMED that the controversy between the plumbers and W. C. Furrey & Co., Los Angeles, Cal., has been amicably adjusted.

JAMES F. TRAYNOR, Wilmington, Del., has again been successful as an organizer, having secured the attendance of the plumbers of Lancaster, Pa., at a meeting last Saturday night, when the preliminary arrangements were made for a permanent organization of the Master Plumbers' Association in that city.

WE LEARN WITH REGRET of the bereavement of Daniel G. Finnerty of Boston, who lost his wife on the 22d inst. after a short illness. The funeral

took place on April 25 and was attended by a large number of sympathizing friends.

THE INSTANTANEOUS WATER HEATING COMPANY, 888 Broadway, New York, have furnished one of their new combination water heaters and shower baths to F. W. Carroll & Co., 1332 Eighth avenue, for placing in a bathroom in the barber shop of one of their customers.

WE HAVE BEEN FAVORED with copies of two very interesting plumbers' directories. One is a directory of the Illinois Master Plumbers' Association, giving a list of the local associations, with the names and addresses of their members, a brief history of the association, portraits of some of the officers, &c. It is of pocket size, bound in stiff paper, and comprises about 100 pages. The other directory is a 72 page book, issued by the J. Shaver Publishing Company of Chicago, giving names and addresses of master plumbers of Chicago, Milwaukee, Minneapolis and St. Paul. It is also of pocket size and is substantially bound in heavy boards.

THE ILLINOIS MASTER PLUMBERS' ASSOCIATION met at Rock Island, on Wednesday and Thursday, 24th and 25th inst. The following Chicago plumbers were present: P. M. Murphy, C. J. Herbert, D. J. Rock, Joseph Embler, T. P. Culliton, John G. Roland, C. T. Byrne, C. J. Boyd, Thomas Conway, Paul Redieske, Jos. B. Breen, T. C. Boyd, W. T. Geary and P. Sanders.

THE L. WOLFF MFG. COMPANY, 93 West Lake street, Chicago, have just issued advance supplement to Catalogue D, illustrating a new line of bathtubs, comprising Wolff's new model Corona, under roll rim Sultana and Neptuna, besides the regular roll rim enameled iron tubs. The Sultana and Neptuna under roll rim tubs are beautiful productions. The rim is 4½ inches wide and very gracefully rounded, the rim having a roll extending far under it, as indicated by the name. These tubs are white enameled, with compression supply fittings, polished and nickel plated all over and arranged for bottom supply, and the Ideal bath waste, also nickel plated all over. The under roll rim is a new invention, never before attempted in the manufacture of cast iron enameled bathtubs by other makers, adding much to the appearance of the tub. All the other tubs shown are of superior grade. The catalogue is handsomely printed, each page having a colored plate showing a full sized section of the rim used on the tub illustrated above it.

THE old and well established plumbing houses in Chicago are suffering severely from the competition of small shops. The manager of a very prominent concern, which has a wide reputation for the class of work done, stated recently as an illustration of the wretched condition of business that he had just been beaten in competing for an important job by a small plumber who had contracted to do the work for several hundred dollars less than the former had figured as the cost of the material. This is rather strong evidence that some rank "skinning" was contemplated. Aside from "skin" jobs, however, very cheap work is now being done by men who until recently were journeymen, but having been laid off were almost forced to rent quarters and go into business themselves. It is asserted that these men are so eager for something to do that they will work all day, all

night, and Sundays, too, without regard to union schedules, whereas if they were working as journeymen they would stick to the eight hour rule and demand every extra for overtime. Thus the master plumber employing journeymen is seriously handicapped in figuring on work which these working master plumbers are able to handle.

"UNSOLICITED ENCUMBRANCES" is the title of a pretty pamphlet sent out by the Toronto Steel Bath & Metal Company, Limited, in the interests of their steel clad bathtubs, which have come into such extensive use. The title of the pamphlet indicates its contents, which consist of signed testimonial letters from all over Canada.

THE WALCOTT-HURLBURT COMPANY, Chicago, favor us with additional installments of their catalogue. The pages now at hand treat of the Maestrom siphon jet closet, the Volga, the Junista, the Kennebec and the Congo washout closets, the Squantum combined hopper and trap, the Bristol washdown, the Neva siphon jet, the Avoca embossed double trap, the Dececo oval embossed, the Dececo square top embossed, the Como, having seat attached to earthenware, &c. These sheets are arranged for insertion in the portfolio to which reference was recently made.

C. A. NEFF, who has been connected with the Dececo Company as a stockholder since their organization, and for the past few years in charge of their Chicago business, has succeeded P. J. Lynch as manager of their Boston branch at 146 High street, Boston, Mass.

HERRERT STANLEY, who has been in the employ of De Grasse Fox for a number of years will build a new plumber shop on Eden street, Bar Harbor, Maine.

T. B. JOHNS, Lima, Ohio, has taken D. L. Bower as a partner in the plumbing business. Mr. Bower is lately of the firm of Dalzell & Cowles, and has worked at the plumbing business for the past twelve years.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

FRANK A. WENDELL, Salem, Mass., has secured the contract for the plumbing and sanitary arrangements at the house of George R. Kelley of Boston, which is being remodeled into modern style at Marchester, Mass. He will also do the plumbing for Mr. Kelley's stable.

THE COMMITTEE of the Union High School district at Woodsville, N. H., have been authorized to install a heating plant and a sanitary system not to exceed \$1500 in cost.

G. M. HAWTREE & Co., 6822 South Halsted street, Chicago, are to do the plumbing and drainage in the flat building of J. Stelver, Sangamon and Sixty-third streets.

THE HALL STEAM POWER COMPANY, 211 Centre street, New York, have the contract for heating the Merritt apartment house on Eighty-eighth street, New York, and have placed the order for the radiators with John Leitch at 266 Centre street, who manages the New York office of the Standard Radiator Company of Buffalo, N. Y.

MURRAY & DONOVAN, plumbers and gas fitters, located at 29 East Third street, Dunkirk, N. Y., have secured

the contract for fitting the house to be constructed by T. W. Sidey on Dove street. The job recently finished for the Erie Hotel is said to be high grade in every respect.

F. A. CARLETON, New Haven, Conn., has the contract for the plumbing in the large Rafael block of eight tenements on Oak street. The building will have eight water closets, sinks and wash trays.

TAYLOR & TAYLOR, Meriden, Conn., have just taken the contract for plumbing Jos. H. Hodgett's new house in Wallingford.

L. H. TOUCHEY, Waterbury, Conn., has the plumbing of F. B. Rice's four new houses on Kellogg street.

E. S. DAVIS, Middlebury, Conn., is to build a house that will be heated by hot water.

M. SPIER, New Haven, Conn., is to build an \$8000 house to have fire places, a hot water heating plant and modern plumbing.

C. E. COE, New Haven, Conn., has the plumbing in a new house for Mrs. Helen Judge.

T. W. CORBETT, New Haven, Conn., has the plumbing contract for the St. Aloysius Hall.

THE BOARD OF PUBLIC WORKS, Louisville, Ky., has awarded the contract for the new plumbing to be done in the City Hall to C. O'Connor's Sons, at \$4100.

THE entire plumbing system of the City Hall, Rochester, N. Y., is to be remodeled.

THE High School Building Commission, Malden, Mass., has awarded the heating and ventilating contract to Albert B. Franklin for \$11,700. Mr. Franklin is president of the Melrose Y. M. C. A. and has the contract for heating the association building recently completed there.

JACQUES H. HERTS, chairman of the School Trustees of the Twenty-second Ward, New York City, will receive sealed proposals until 9:30 a.m., May 1, 1895, for "Improving the sanitary condition of Primary School No. 41, at 464 West Fifty-eighth street." Hiram Merritt, chairman of the School Trustees of the Seventeenth Ward, will receive sealed proposals until 4 p.m., April 29, 1895, for "supplying the heating and ventilating apparatus for the new school building on the northeast corner of First avenue and Ninth street." All proposals will be received at the hall of the Board of Education, and plans and specifications may be seen and blank proposals obtained at the office of the Superintendent of School Buildings, 146 Grand street, third floor.

CHARLES BREYER, 187 West Division street, Chicago, has the contract for the plumbing and drainage in the flat building of Peter Barband, 810 North Western avenue.

SMITH & DORNEY, 1046 North Western avenue, Chicago, are to do the plumbing and drainage in the flat building of W. Mageeki, Diversey street.

ARNOLD BROS., 507 South Western avenue, Chicago, have the contract for the plumbing and drainage in the flat building of E. Miller, 844 South Homan avenue.

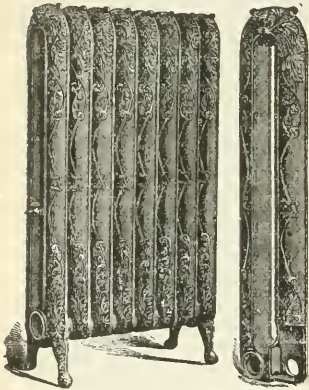
PETER SCHMIDT, 4928 State street, Chicago, is to do the plumbing and drainage in the store and flat building of William Miller, Halsted street, near Archer avenue.

(Continued on page 54.)

STEAM AND HOT WATER.

The Napoleon Radiator.

A radiator which departs from the usual construction is being manufactured by the Moore Bros. Company, Elizabeth, N. J., and put on the market by Lockwood & Adams, 69 Centre street, New York. The accompanying illustration shows a general view of the radiator and also a single section, cut away at the bottom, showing a diaphragm which produces a continuous circulation through the radiator. The sections, instead of being connected through the center, as is customary, are connected on the outside or at the center of the column and alternately so that the inside surface of the radiator is well supplied with air directly from the bottom. As steam enters the radiator it passes up one column and down the next, and from this point into the bottom of the next section, the course of the steam being the same in each section throughout the entire radiator so that positive circulation is secured.



The Napoleon Radiator.

The opening shown at the bottom of the diaphragm permits the condensation to flow directly through the radiator to the return pipe. It is said that the radiators are all tapped two inches in size, and the opening can be reduced when necessary by means of bushings. The supply and return end sections are tapped for air valves, a brass plug being furnished to close whichever opening is not used. The opening in the bottom of the return section is said to be enough lower than the supply opening to allow the condensation to pass off freely. The different sections are connected by means of push nipples. The radiator is being made in several different heights.

THE WILKES MFG. COMPANY, 113 to 123 Clinton street, Chicago, are making a large shipment of heaters to San Antonio, Texas, and have just shipped a large heater to Chihuahua, Mexico, several to Philadelphia, Washington,

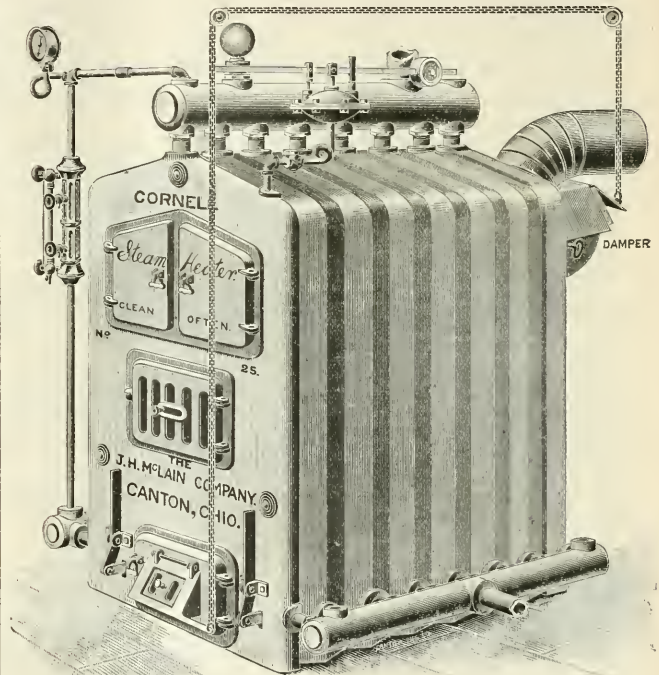
D. C., New York City and Brooklyn, N. Y., and report a large trade from St. Louis, Cincinnati, Cleveland and Milwaukee. They have a number of inquiries in regard to the letter of O. W. Norton in *The Metal Worker* of April 25. Trade shows a very large increase over last year.

The Cornell Steam Heater.

The Cornell steam heater, a new boiler put on the market by the J. H. McLain Company, Canton, Ohio, is il-

lustrated in the accompanying cuts. Fig. 1 is a general view of the boiler, Fig. 2 is a longitudinal sectional view, Fig. 3 shows one of the intermediate sections of the boiler and Fig. 4 is a view of the back section showing back wall. The boiler is now made with 32-inch grate, 76 inches high over all and with an average length of about 80 inches. This series will supply from 1100 to 3050 feet of steam radiation, and will be made up of 8 to 14 sections. In the sectional view, Fig. 2, it will be seen that the largest portion of the heaters is made up of duplicate sections, Fig. 3, the different sizes of boiler being made by adding these sections or taking them from it. The heater is designed with a view to combine the excellences of the vertical section boil-

ers for vertical circulation of water and with screw joints and return flue. Each section runs down entirely to the floor surrounding ash pit with water, thereby getting the benefit of heat below the grate and saving the grate from burning out. The sections themselves form the ash pit. There are no direct connections between the sections, but instead they are connected to drums, as shown in the illustrations. It is pointed out that this lessens the chances of damage from leakage, as the nipple connections are in full view and accessible at



The Cornell Steam Heater.—Fig. 1.—General View of Heater.

lustrated in the accompanying cuts. Fig. 1 is a general view of the boiler, Fig. 2 is a longitudinal sectional view, Fig. 3 shows one of the intermediate sections of the boiler and Fig. 4 is a view of the back section showing back wall. The boiler is now made with 32-inch grate, 76 inches high over all and with an average length of about 80 inches. This series will supply from 1100 to 3050 feet of steam radiation, and will be made up of 8 to 14 sections. In the sectional view, Fig. 2, it will be seen that the largest portion of the heaters is made up of duplicate sections, Fig. 3, the different sizes of boiler being made by adding these sections or taking them from it. The heater is designed with a view to combine the excellences of the vertical section boil-

all times should they be in need of tightening. The nipples are made of extra heavy pipe to overcome any tendency to buckle when being tightened up. Each section is an independent circulator. The heater is designed to be covered with asbestos cement, and about the edges of each section are cast keys, between which the cement is forced and when it hardens keys itself in. Cleaning doors are placed in front of the heater, giving easy access to every part of the flue surface, and the soot and dust deposited therein does not require to be removed at front of heater, but is swept down into fire pot and thence finds its way into the ash pit. The grates are designed for burning any kind of coal, even to slack, and the feed doors being large, wood, it is

sald, is very successfully used in it. The bars are interchangeable and will fit any section of the same series. Each

another grate bar is added with each section, thus keeping the proportion of the grate surface and the water heating

and removed from the feed door without trouble. In Fig. 4, illustrating the back wall, is shown the extension of every available heating surface by corrugating it, offering as much surface for heating water to the action of the fire as possible. The flues are so proportioned with the view to give the largest amount of heating surface in conjunction with the shape providing the greatest strength. In the sectional view, Fig. 2, is seen the damper, which makes the draft either direct or indirect. This cut also shows the general scheme of the indirect draft.

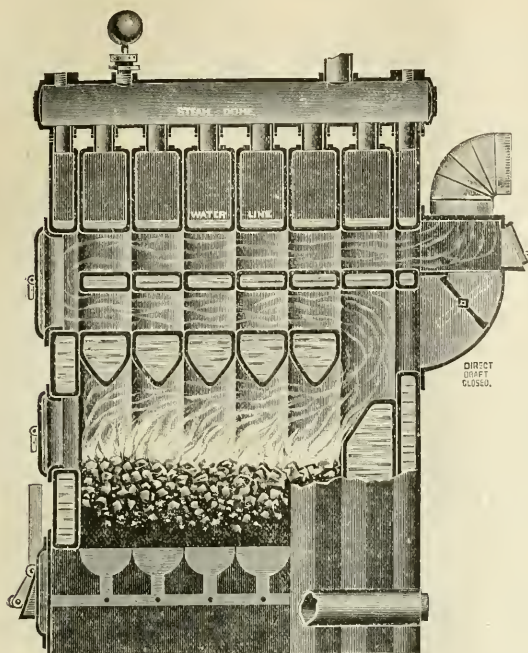


Fig. 2.—Longitudinal Section through Heater.

"THE New Sun Steam and Hot Water Boiler" is the title of a catalogue issued by Broomell, Schmidt & Co., Limited, York, Pa. This is the well-known Lindemuth patent in its latest form. The boiler is not cast iron and this point is emphasized on the front cover of the catalogue. The general form of the Lindemuth boilers is familiar to the steam and hot water heating trade and they will be interested in reading this complete account of the latest improvements in this well known apparatus. Sectional views are given showing all the different styles, while special cuts are presented of the top view, of the grate, &c. In addition to the engravings full particulars are printed and there is a full table of sizes and other particulars. The Lindemuth Sun semi water tube steam boiler is illustrated with a broken view as well as the similar boiler for hot water heating. At the end of the pamphlet is a picture of the Heatencook range, which is a combined heating and cooking range, adapted to heat a house of from five to seven rooms by hot water from the kitchen fire, and in addition to heating

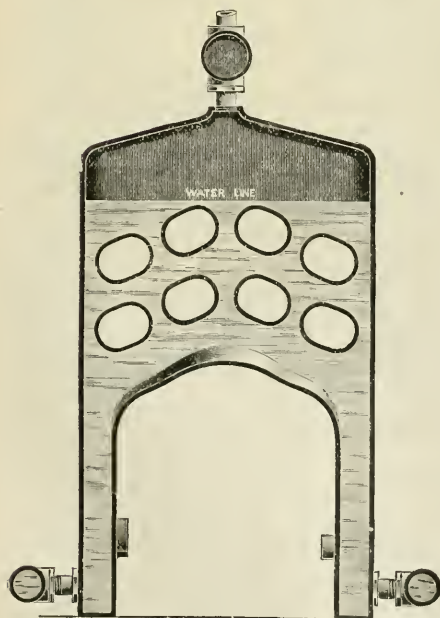


Fig. 3.—Intermediate Section.

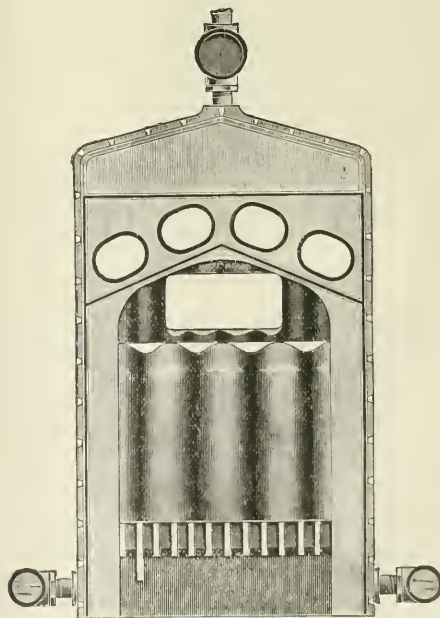


Fig. 4.—Back Section.

section has its own independent grate bar, and when it is desired to add new sections, obtaining more capacity,

surface in the same ratio. The grates are so arranged that any bar may be disengaged from shaking connection

and cooking the range supplies all the hot water desired for bath, laundry and kitchen work.

Exhaust Steam Heating.

The following paper was read before the Steam Fitters' Protective Association of Chicago by F. G. Perkins of the John Davis Company:

It has been truly said that a man in the forest cannot see the horizon, and so a man engaged in the every day practice of his work, starting in early in the morning and closing at night, very seldom has a fair conception of the gradual changes that take place in his own business. I do not know of any business in which this is more true than the one in which we are all engaged.

I would like to have you turn back a few years and consider the methods and results expected then and what they are now and note the great difference. Take the subject of house heating.

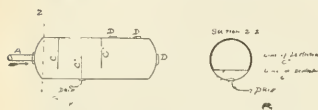


Fig. 1.—Sketch of 36-Inch by 8-Foot Expansion Tank.

Twenty years ago I don't think a steam fitter in this city ever did a successful basement one-pipe job. Such a thing wasn't known. Everything was two-pipe, either steam or water.

Modern Methods.

To day there isn't a steam fitter who would think of doing a two-pipe job on steam except at the point of a pistol, nor would the best mechanics use a two-pipe system on water heating.

Take the division which we call combined power and heating plants, wherein we take high pressure steam and use it in the engine, transferring it from the cylinders into the heating apparatus. Ten years ago it was only used in a few plants. To day we look at any plant that throws away its exhaust steam as being a back number, and the owner who does it should think rightly that he is wasting money. The

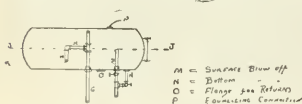


Fig. 2.—Sketch of 36-Inch Receiving Tank.

most important inventions of to-day have come about in the proper use of exhaust steam, and to these we will devote the time this evening.

The Problem of To-day.

To day the best problems of engineering in our business that I know of arise in what we call a power and heating plant, where the exhaust steam is to be used in heating. These problems are made the more difficult by the limited area in which all the factors are to be placed. It is an ordinary occurrence to be called upon to place a 500 horsepower plant in the excavation under a sidewalk or alley, though happily this evil is lessening as engineers acquire backbone. As you all know, when we get through with our steam in the cylinder of the engine we have used 2 per cent. of its heat. When we throw it out into the atmosphere we lose 98 per cent., and you can call the exhaust pipe a vertical sewer with its lower end in a man's coal pile. We all know that it is

possible to regain that exhaust steam. What is the best way of regaining it, and to begin, what is the best way of getting the oil out of exhaust steam?

Grease Extractors.

In my experience the best way of getting the oil out of exhaust steam is to run it into an "expansion tank." The oil in exhaust steam is suspended to the drops of water in the steam. Every little drop of steam has a drop of water with oil attached. Interrupt the course of the steam and you can precipitate part of that water, but you can precipitate it more if you can slow it right down; that is, lower its velocity. If you can suddenly slow it down and change its direction as well you can get more oil and oily water precipitated than in any other way. For instance, consider that the exhaust steam comes in through a 6 inch pipe, A, Fig. 1, and the diameter of this tank B is 36 inches. You can readily see that if the steam has a velocity of 300 feet per minute passing through this pipe, when it suddenly emerges into a pipe six times as large the velocity is greatly reduced. That results in dropping that water to which the oil is attached. If you put some deflecting plates at C you can change the direction, which aids it very materially, and that arrangement has no superior in the way of getting oil out of exhaust steam.

The Receiving Tank.

Together with this comes another thing. We will assume that through carelessness more or less oil has passed through and gets into the heating system. The steam is condensed therein, and the oil which has not been extracted and the water come back into the receiving tank together. Now, we must have some means whereby the boiler feed pump will not draw that oil. The receiving tank of course is supposed to have a surface blow off as well as a bottom blow off, which will aid if properly attended to. A more certain way is the following, viz:

Let F, Fig. 2, be the receiving tank. The suction pipe for the pump is G. The valves of the pump of course are supposed to be flooded at least 6 inches by the water line of the receiving tank. The suction pipe G is carried nearly to the top of the receiving tank, with an open end at the water line. A T and a horizontal nipple, H, having an elbow are screwed on and another nipple, I, turning down, say, one half the distance between the water line and the bottom of the tank. You will see that now this pump cannot possibly draw from the surface of the water, where the oil will rise; it can only draw from the point K, and that only as long as the water is as high as the bottom line of the nipple H, J. As soon as the water falls below H the pump will no longer draw until the water level rises again, carrying the oil with it.

Laying Out a Plant.

We will pass now from the details to the general arrangement of the plant. We will suppose that the steam has been carried from the various mechanisms delivering exhaust steam into the expansion tank, where the oil has been removed as far as possible.

The various distributing mains are taken from this expansion tank, D, Fig. 1, and it is customary to cross connect the exhaust steam so that in summer time the exhaust steam will not enter the expansion tank but will pass on to the roof. The exhaust steam is generally passed through the heater before entering the expansion tank.

The sizes of the mains are calculated in the best practice from the amount of hydraulic head at our disposal. We will explain the term hydraulic head later, and for the time being will consider that it means practically the available distance between the water line of our receiving tank and our basement piping. In most buildings over six stories the steam is carried to the attic and the distributing main is placed there, the risers branching from this main.

Connecting Risers.

I believe in taking these risers from the bottom of the main so that each riser takes what little condensation has occurred between itself and the previous riser. By so dividing it, the amount is very small to each riser, whereas, if the branches are taken from the side or top of the overhead main in a large building the aggregate is considerable, necessitating the use of special eccentric fittings where the sizes are reduced or of separate "bleeders," which are a nuisance. In all cases there should be a right angle turn between the main and the riser to allow for expansion, and the best practice is to place the main 6 feet away from the riser. The riser should be valved at top and then descend through the various floors, supplying the radiation as demanded.

The Overhead System.

On an overhead system, where two branches are taken on a floor, it is perfectly practicable to use a cross with no dividing plate inside the fitting, which used to be thought necessary. These risers may be reduced, going down of course, since the condensation always

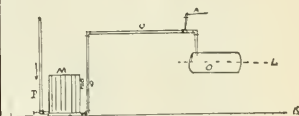


Fig. 3.—Sketch Showing Circulation through Basement Radiator.

precedes the steam and cuts no figure. No special expansion joints should be used on these risers, whatever the height of the building.

In buildings up to 12 stories the simplest way is usually the best—viz., to anchor the riser in the middle and allow the expansion to go both ways, taken care of by the expansion branch at the top and at the bottom of the riser. The lower floor should never be taken from the riser, and this holds good always on overhead systems, as described, or in the basement one-pipe system, which will be described later. After passing the second floor the riser may be sharply reduced at the ceiling of the first floor to 1½ inches if the riser started 3½ inches, or 2 inches if the riser started 4 inches. A 3 inch riser at the start may be reduced to 1½ inches, but the difference in cost between 1½ inches and 1½ inches for this short run is so slight that I do not reduce below 1½ inches.

These various drips are connected in the usual manner and brought back into the receiving tank. The overhead system is, of course, the ideal way of doing steam work, and the gratitude of the trade is due to John H. Mills, the inventor of it. It was the longest step in advance of previous practice that steam fitting ever took, and his later extension of it to hot water was the next great step, and to this man,

easily the foremost heating engineer of the day, our trade must ascribe the largest share of the advance in the last 20 years.

The One-Pipe System.

The one pipe system in the basement must be conducted on somewhat different lines, for the possibility of trouble is more frequent, owing to the fact that in the risers the steam and the water take opposite courses, which, however, is no drawback if the piping is properly run.

In this method the piping must be kept full size to a much greater degree than in the overhead method, and all reductions must be made by the use of eccentric fittings. The risers must come from the top or the side of the main, and none should be taken out within 4 feet of a right angle turn of the main pipe if possible. The branches to the risers should be run one size larger than the riser, and in cases where the riser is distant 10 feet the branch should be increased two sizes. It is bad practice to run a branch of over 14 feet, and, in fact, the speaker would say that 10 feet is the limit which he would advise running a branch. In cases over this it is better to deflect the main so that the main can be run closer.

The first floor radiation should be taken from the branches, and never from the riser, and, of course, every branch should have a valve close to the main with a drop tee behind the valve, so that the riser can be drained of its condensation if repairs are needed.

The main should be kept high until it reaches the boiler, and all underground piping containing a constant amount of water is to be discouraged, and one of the great advantages of the one-pipe method is the fact that the pipes are always dry, except for the slight amount of condensation always passing.

In other words, when the steam pressure is down there is no water in the piping to freeze.

Local Methods.

It is a curious fact that the methods of steam fitting are better west of the Alleghany Mountains than on the east coast, and the whole difference is in the way of piping steam and water.

The one-pipe system in New York, Boston, Philadelphia or Baltimore is looked upon with the greatest suspicion and disfavor on account of the failures made 15 years ago by people who did not know how it was done, whereas all of us who have been through both methods know the one-pipe plan is as far superior to the two-pipe method in quietness, ease of operation, freedom from leaks and repairs as the modern locomotive is ahead of the first one built by Stevenson.

No wonder in Chicago to day would think of having two valves to a radiator, to double the annoyance from leaks, noise and the chance of water backing up in the radiators, when one is closed by mistake, nor would he consent for a moment to have a sealed water line always full of water to freeze when the steam went down through negligence in cold weather. Yet these things are tolerated and, in fact, specified by the best architects of Boston and New York, and there is no way to account for it.

Circulation Under Low Pressure.

In summing up the question of piping, it is not a good workmanlike system, great or small, 1000 feet or 50,000 feet, unless a circulation is possible in every part of the system with a gauge pressure of 2 ounces ($\frac{1}{4}$ pound),

if there is any noise of any description in the pipes (unless from misfiring of valves), or if, on starting the apparatus cold, any flooding of pipes occurs.

In the hasty fashion our time allows we have gone over the skeleton, so to speak, of our apparatus. Let us take up together the question of utilizing the steam to its fullest extent, remembering that the wreath of steam flowing from an exhaust head in winter is a reproach either to a short sighted owner or to poor engineering on somebody's part.

I want to ask you to consider the question. Does a man always use his exhaust steam when his usual pressure is 3 or 4 pounds? Can he do so? Is it not a fact that, whenever you ask a man in a modern building if he uses his exhaust steam, he says, "Yes." And if you ask him his pressure, he says, "Well, we use 2 or 3 pounds pressure. Sometimes, in cold weather, we get up to 6 or 7 pounds, but don't like to do so on account of the back pressure."

Back Pressure.

If a man's usual back pressure is 4 pounds and he sets his back pressure valve to 6 pounds, and if his electric light engine, his boiler feed and elevator pumps all happen to discharge steam into that system at the same time the pressure generally rises 2 or 3 pounds. If he has his back pressure valve set 2 pounds higher the sudden increase, of course, lifts the back pressure valve and the steam gets out. If you will watch the exhaust head of any large plant in winter time you will often find that during the time that the exhaust steam ought to be fully at work, and even during the time that the normal demand for heat in the building is more than the normal exhaust steam will supply, the reducing pressure valve will occasionally open and exhaust steam blow out. The reason for it is that they cannot endure more than a certain amount of back pressure without impairing the efficiency of the various mechanism. The increase occurs occasionally when all the mechanisms discharge exhaust steam simultaneously.

Saving Exhaust Steam.

If this is true, I want to ask you if it would not be possible to save all that exhaust steam in case the normal back pressure was only $\frac{1}{4}$ pound, since, then, all this additional pressure which would be caused by these mechanisms discharging at once would then only amount to 3 pounds, and it could be held there, without blowing off, until some of those machines slowed down, and the heating system could absorb it. This is a very important point, and you must consider it carefully, for on it hangs what we now will consider. We have never had any method, prior to the last few years, by which we could use exhaust steam the winter long without using from 2 to 5 pounds pressure. That 2 to 5 pounds pressure was a great step in advance, but not as great as, I am confident, will be taken before long, and the next step will be so an engineer can say: "I only carry atmospheric pressure." If he only carries this, and is in the circumstances we have treated before, he will not lose any exhaust at all. How can this be done? I have looked into that question for a year and a half, and have seen ways by which it can be done. It can be done by putting some accelerating apparatus on the other end of the system, by which the friction in the pipes and, most of all, the air in radiators will be taken away. There are two ways that I know of at present by which this is attempted.

Vacuum Systems.

Both are systems employing vacuum. One system applies pump and cold water spray to the return end of a double pipe circulation, and I have seen it do excellent work. One drawback with that system, to my mind, is that the pull is constant. As long as the plant is in operation the pull exists on the return pipes, drawing the steam as well as the water. The steam coming through is condensed by a cold water spray, and the excess is passed off through the waste pipe. That is a waste. Whether that waste is enough to overcome the counterbalancing advantages of using vacuum, if we had no other way to obtain it, is another question. Another thing is that the important point of accelerating the discharge of air, which is the great obstacle to circulation, is not touched at all, except in the indirect way of pulling at the returns. To use this method on one-pipe work would necessitate changing the heating plant to two-pipe. But I have seen applied and used myself another method of vacuum, which seems to me to have some very strong points of advantage in its favor. The system essentially consists in attaching the vacuum not to the return end of the circulation, but to the rear end of the radiator, stopping it by means of an automatic air valve as soon as the radiator becomes warm. This, you can see at once, is a very good point in its favor. A man doesn't want his vacuum at work any longer than it is of use. The moment the surface gets warm it should stop. Take a radiator loop—the end loop.

The Use of Air Valves.

If to the end loop of this radiator you can attach an automatic air valve, and at the end of that air valve you can attach a small pipe, bring it down into the basement and attach it to a small ejector, we clearly can aid our circulation, and by more than the amount we can reduce the pressure on the other end, for I have seen cases on old piping where a circulation previously was possible only at 35 pounds, and now the circulation is possible on an ounce, and practicable on $\frac{1}{4}$ pound, the pressure last winter varying from $\frac{1}{4}$ to $\frac{1}{2}$ pound. This shows us that the elimination of air in the radiator has a larger bearing on the questions of the circulation and of getting the heat from the surface than we have ever considered. In this case putting 15 inches vacuum at the air valve circulates steam where 25 pounds would not before, and the surface gives out more heat at atmosphere than it formerly did at 25 pounds. Of this we will speak later. Now you will see the bearing of the question I asked you before: Is it not possible, by means of reducing the customary pressure, on modern work even, to hold all of our exhaust steam by incurring an increased pressure, which then can be allowed until the apparatus can pick up and draw on it, and so we do not have to waste the temporary surplus? I am satisfied that the answer is "yes."

Advantages of a Vacuum System.

There is another advantage in this method, which is called the Paul system, of which I would speak to you. As you know, a very great source of annoyance has been when we have been called upon to heat rooms in the basement or below the water line of our receiving tank. Usually we have to put in ceiling coils, or else trap the return into the catch basin, and waste it. It is possible, by means of this Paul system, to put the heating surface at or be-

low the water line of the receiving tank on atmospheric pressure, carry the waste water along the ceiling and discharge it in any way you please. For instance, it is possible, assuming that K, Fig. 3, is the floor of our basement and L the water line of our receiving tank, to put a radiator at M, connect the steam into it, take the return from it and throw it over into the tank O, and have this radiator perfectly dry. There are some curious conditions, I have seen 1 pound pressure in this pipe P delivering steam. I have seen 1 pound pressure in this pipe Q all the way from the radiator, no vacuum at all, just pressure, yet I have seen the water of condensation lift from the radiator, simply induced by this tiny air pipe A at the top of the loop, which is attached to an exhaustor. This subject is a very interesting one in some ways. If you can circulate a system below atmosphere in a large building, you can certainly circulate it below atmosphere in a dwelling house.

Low Temperature Steam Heating.

If you can circulate it below, how much below can you circulate it? In other words, it is possible that in a few years from now we will be heating houses not by hot water but by steam below atmospheric pressure, of such a low temperature that it gives all the advantages of hot water without any of the disadvantages of the larger radiation, &c. For instance, we know water under 12 pounds pressure, measured from vacuum, evaporates at 213°. At 4 pounds it evaporates at 150°, because the pressure is partly taken off. Suppose it is possible in a heating apparatus to reduce the pressure inside that system. It is then clearly possible to vaporize that steam at 150, 160 or 170, depending entirely on the amount of attenuation to which you carry the pressure. I present this subject for your consideration as being possibly one of the lines on which our trade will advance, precisely as we have gone, step by step, in the last 10 or 15 years until now we have a kind of steam fitting which every man may well be proud of.

Probably half the people before me are working engineers or steam fitters like myself; men who meet every day with some of these questions concerning the application of steam and power, and I would like to give an illustration of one advance in steam fitting coming under my personal observation.

The Auditorium Building.

Every one here knows the Auditorium Building. The old plant was piped on what was called the Osborne system, now little used. If a man put in a receiving tank under that system it was called a hydrothermoston, and such curious things as that long worded way of doing simple work. The Auditorium Hotel cost in 1891 \$46,000 for attendance and fuel. The Auditorium office building cost \$42,000. In round numbers this was \$90,000 for the two buildings. At that time another building was erected called the "Annex." The cost of running that plant on the same basis would have been \$30,000, which would make \$120,000 for heating these buildings. A new plant was erected to do the whole work, the two old plants being abandoned. The cost of running the new plant per year for the last year, including attendance, engineer's expenses, fuel, oil, depreciation, and in fact everything, was \$55,000, which shows a saving of \$65,000 in the plant as designed to-day over that of five

years ago. Is there any stronger evidence that our business is advancing?

Queries.

Question 1: In that connection you illustrate there, Fig. 3, does that air valve B have to be connected on each separate radiator, or to the main return at the extreme end?

Answer: It is necessary to connect each air valve. There has to be a connection from each radiator and a connection from the top of the loop as well. This loop does not exist for each separate radiator. It is formed after the returns from all the radiators are united. Then this pipe is taken and discharged over into the tank.

Question 2: And the air valve pipe?

Answer: The pipe from the air valve is taken from each separate radiator.

Question 3: Can you connect into a main exhaust pipe going out of doors in a manufacturing plant with no back pressure valve?

Answer: Yes. You might call this a "leech" system. Each one of these radiators has this leech on it which sucks the air out of the radiators and closes when the steam strikes the automatic valve, thereby limiting the pull. All the time below this air valve there is a vacuum of 10 to 15 inches. Any time the radiator cools this automatic air valve opens until the air is drawn out and then shuts. The pull across the seat of the air valve keeps it clean. The use of a back pressure valve merely allows a higher pressure than atmosphere to be carried.

Question 4: How does the reduction of temperature in radiator caused by reducing the pressure affect the amount of heat given out by radiator?

Answer: That is an important question. If any of you have a plant under your charge where you are using 35 or 40 pounds pressure, the thought would strike you at once. I find this to be true, of which I was skeptical. By getting all the air out of the heating surface we increase the efficiency of that surface so much as to make up for the difference in pressure.

The building to which I have referred before formerly used 35 pounds pressure, and the engineer, who is before me, has told me that he has less trouble in corner rooms now on 1 pound pressure than he had formerly with the greater pressure. There is no way to account for it, unless that by using this method we get all the air from the radiators so that every inch of that surface is alive. For instance, a communication has been made to me by an engineer, who states that from a large indirect coil, on what is called the Sturtevant system, which formerly used 10 pounds pressure, the temperature of the air was raised 5° by putting on the Paul system, using ½ pound pressure.

Question 5: What causes a circulation in that system after the air valve is closed, when you have only that ½ pound pressure, and the system has been working on 40 pounds pressure before?

Answer: The same thing which was present before—viz., the condensation of the steam present in the radiator, now greatly aided by the withdrawal of the air produced by the condensation of the steam and liberated in that process.

Question 6: What effect would that have on a one-pipe job?

Answer: That is a good question. I hoped that would come. It has no different action on the one-pipe system than it has upon the two-pipe system, because the points of vacuum have

nothing to do with the return system but are on the radiators themselves.

Question 7: Wouldn't it have a tendency to pull the water to the back end of the radiator in getting steam up first?

Answer: No, it works the other way. If in ordinary practice you open the air valve wide the water sometimes rushes out if the piping is a trifle small. That is so because there is always some water present, but by using this system the danger is anticipated. The radiator is shut off and cools, opening the air valve so that a 15 inch vacuum begins to pull on the radiator, re-evaporating the water left in the radiator and drawing it away, leaving the radiator dry, so that on very unsatisfactory radiators, radiators that formerly filled with water all the time, the application of the attachment has cured that. In a hotel building or apartment house the odor from air valves is very much complained of. That is nearly always present in case any strong boiler purge is used, forming a combination with the elements in the water, and by using this method I have observed that the cause of complaint is entirely done away with. The engineer at a large hotel told me some time ago that on one occasion the patrons of the hotel complained of a smell coming from some boiler purge he was using, so he went to the drug store and got some oil of peppermint and put it into his expansion tank, and everybody went around sniffing and accusing the other fellow of having peppermints about his person.

Question 8: Is that tank, Fig. 2, a closed tank?

Answer: Yes. The particular point I want to insist on is that by doing this the water must be as high as J in order to let the receiving tank draw from K. There always has to be that difference between the surface of the water and the point of the pipe, and by doing that it is impossible to draw any oil at all. I have seen tanks rigged up like that with no extractor, and the whole water glass here would be filled with oil, and yet there would be no trouble at all.

Question 9: How do you get the grease out of it?

Answer: You have your blow off here at M coming inside and running up with a long thread nipple, and by shutting the angle valve and opening the gate valve you blow from the surface.

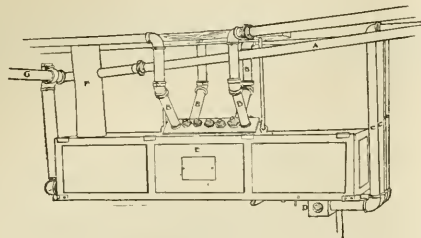
The Universal Heater.

In the accompanying illustration we show a new hot water house heating apparatus called the Universal heater, made by the Illinois Safety Heater Company of St. Charles, Ill. The apparatus is designed for using gas made from any of the fuel oils, preferably gasoline. A tank, or more correctly speaking a gasometer, is buried in the ground a short distance from the house, and is filled with fluid through a filtering device, air being supplied to the tank by means of an automatic air pump. A pipe leads from the tank to the gas generator and to burners located beneath the heating apparatus. Fig. 1 shows the Universal heater suspended from the ceiling of the cellar with the flow and return pipes connected with it. Fig. 2 shows the longitudinal section, and Fig. 3 the cross section. The gas after passing through the generators is carried into the heater as shown in Fig. 2 and is burnt in a series of jets. The products of combustion are forced to pass the entire length of the heater twice by an

arrangement of heating surfaces inside of the heater covering before they escape to the chimney. The heater itself consists of two thin, wide water sections placed one above the other and connected at the center. A return header is connected with the lower air section to receive the return pipes from the heating system. At the center of the top water section is a flow header

HEATING NOTES.

THE CARTON FURNACE COMPANY, Utica, N. Y., have received notification from the Patent Office at Washington that the application for the patent on their steam and hot water boilers has been granted. They are now starting to get up another series of boilers to embody all the general features of their



The Universal Heater.—Fig. 1.—General View.

from which the heating mains are taken. Some idea of the power of the apparatus may be gained from the size of a house which it is claimed has been heated by it. The house contains several rooms, the amount of space heated being 12,000 cubic feet. It is said that with the mercury at 18° below zero there was no difficulty in heating the house comfortably. It is also stated that the heater was run for 15 days on an average of 41 cents a

present series A. These patterns they intend to rush to completion and have them ready for the early fall shipments.

WASHEURN, GARFIELD & Co., Worcester, Mass., are making a specialty of the Andrus water heater, made by Abendroth Bros., N. Y., in all of their hot water heating contracts.

THE RICHMOND STOVE COMPANY, Norwich, Conn., issue a circular giving illustrations of the Richmond sectional

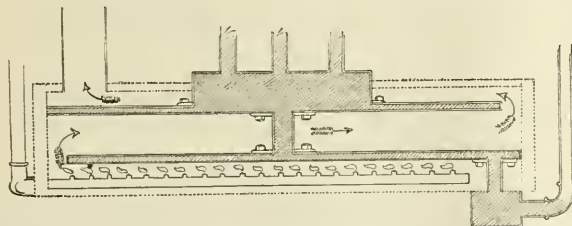


Fig. 2—Longitudinal Section.

day for fuel. The advantages claimed are that the heater may be suspended from any part of the building desired, that it occupies no space on the cellar floor, and that there is no dirt from ashes and coal. It is pointed out furthermore that it may be operated as easily as an ordinary lamp. A supplementary generator is arranged with an automatic cut off and alarm, so that should the gas condense and the fluid run back, it will overflow into a drip pan and then into a bucket suspended on a lever which controls the gas sup-

heaters of the two new series, Nos. 325 and 336. These heaters are for steam or hot water, and those who wish to study their construction can gain a complete idea of their features from the numerous illustrations in the circular. The essential particulars of sizes, etc., are also given in tables at the end.

THE FARQUHAR HEATING COMPANY, Blue Island, Ill., manufacturers of warm air, steam, hot water and combination heaters, have changed the firm's name to the Wireton Heating Company. Foster & Glidden, 53 Dearborn street, Chicago, are the company's local agents.

The steam and hot water heating contractors in and about Chicago are doing much less business than usual. A few of them have been able to pick up enough contracts to keep their force of workmen going, but the majority find their expenses exceeding their income. The consequence is that prices are seriously cut. One concern the past week concluded to test values pretty thoroughly and made a bid on a fine job of steam heating at absolute cost. But he proved to be a little too conservative in getting his figures down, for a competitor beat him just \$300, which is about 10 per cent. of the total amount of the contract

Patentable and Unpatentable Inventions.

The Supreme Court of the United States, in an opinion read on April 22 by Justice Brown, declared a decision in regard to the distinction between patentable and unpatentable inventions which is of considerable interest to inventors, owners of patents and manufacturers. The case in question came from the Circuit Court for the Northern District of California, and involved three patents for the manufacture of belt pulleys and for the product of that process, which Philip Medart *et al* alleged had been infringed by the Risdon Iron & Locomotive Works. The California court's judgment was in favor of the plaintiffs, but this ruling was reversed. Discussing the claims of the patent for the manufacture of the pulleys, Justice Brown said: That certain processes of manufacture are patentable is as clear as that certain others are not, but nowhere is the distinction between them accurately defined. There is somewhat of the same obscurity in the line of demarkation as in that between mechanical skill and invention, or in that between a new article of manufacture which is universally held to be patentable and the function of a machine which it is equally clear is not. It may be said in general that processes of manufacture which involve chemical or other similar elemental action are patentable, though mechanism may be necessary in the application or carrying out of such processes, while those which consist solely in the operation of a machine are not. Most processes which have been held to be patentable require the aid of mechanism in their practical application, but where such mechanism is subsidiary to the chemical action the fact that the patentee may be entitled to a patent upon his mechanism does not impair his right to a patent for the process, since he would lose the benefit of his real discovery, which might be applied in a dozen different ways if he were not entitled to such patent. But if the operation of his device be purely mechanical no such considerations apply, since the function of the machine is entirely independent of any chemical or other similar action. . . . It is equally clear, however, that a valid patent cannot be obtained for a process which involves nothing more than the operation of a piece of mechanism, or, in other words, for the function of a machine.

In a certain London restaurant use is made of plates electrically heated, in order to keep the food warm. So long as the current is turned on the food is kept at an even temperature. There is said to be no danger of receiving a shock on touching the plate.

A dispatch from Tokio, Japan, states that in view of misstatements and misrepresentations in regard to the terms of the China-Japanese treaty of peace, the Japanese Government has issued an official declaration that the commercial concessions obtained by Japan were not exclusive, but extend to all powers now using the treaty ports of China. Japan, it declares, has secured these privileges for the general good of all countries.

The report has been confirmed of rich gold "strikes" in Bonito Creek and in the Cochiti district of New Mexico.

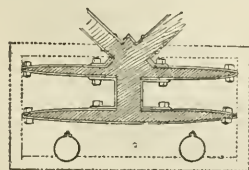


Fig. 3.—Cross Section.

ply, and should this device become full the gas supply will be cut off, and when arranged with an alarm the people of the household will be apprised of it.

ROOFING AND CORNICE.

Pattern for a Diagonal Raking Bracket Under a Hipped Roof.

BY W. N.

We recently did some work on a tower, the section of whose cornice is shown in Fig. 1. As will be noticed, wooden rafters projected over the walls and were sheathed at the top and bot-

tom as shown, then galvanized iron brackets were placed under the hipped roof and represented the wooden rafters below. The method of construction may be briefly described as follows:

After all the wood work was covered, galvanized iron brackets L, Fig. 1, were nailed to the under side of the hipped roof, the brackets being shown in plan view in Fig. 2 by B and C.

tom as shown, then galvanized iron rafters were set on the wooden plate S, and sheathed below, the sheathing would run flush with the flange J on the molding B C.

E E E represents the sheathing on the top, front and bottom of rafters, and is covered by a galvanized iron

molding and planceer, shown at F, which overlaps at J, and is nailed to the flange of the lower molding. A lock is formed on to the molding F, at O, to which the roofing is attached.

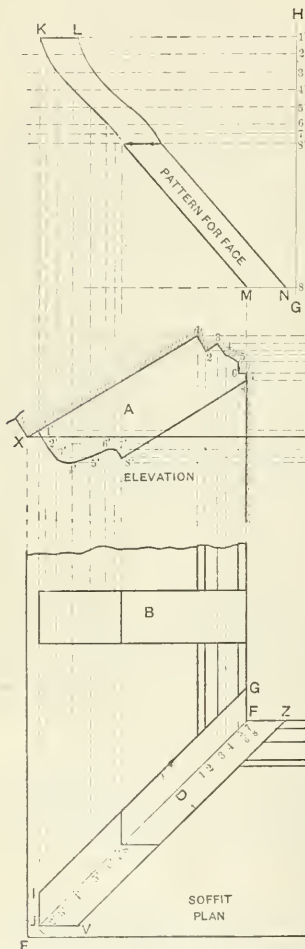


Fig. 2.—Plan, Elevation and Diagonal Elevation and Method of Obtaining Patterns.

PATTERN FOR A DIAGONAL RAKING BRACKET UNDER A HIPPED ROOF.

After all the wood work was covered, galvanized iron brackets were placed under the hipped roof and represented the wooden rafters below. The method of construction may be briefly described as follows:

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the normal bracket and placed under the angle of the hipped roof, the patterns for which are required. For obtaining the patterns for the face and sides of the bracket proceed as follows: A, in elevation in Fig. 2, represents a duplicate of the molding and bracket shown in Fig. 1. Directly under the elevation, and in line with it, draw a plan view, as shown, with the diagonal or miter line E F. At right angles to E F, on either side, place one-half of the width of the brackets B or C, as shown at D. Parallel to E F draw the lines I G and Z V; connect the points I J and Z V, then will I J V Z F G represent the plan view of a diagonal bracket. Now space the molding in the elevation into an equal number of parts, as shown by the small figures 1, 2, 3, 4, &c., and drop perpendicular lines from these points until they intersect the diagonal or miter line E F.

From these same divisions in the molding draw horizontal lines to the right, indefinitely, as shown by the dotted lines 1 1', 2 2', 3 3', &c. These horizontal lines will be used in developing the pattern for the side of the diagonal bracket. Now space into an equal number of parts the profile of the

on the pattern. The cut K M in the pattern is the one which will be joined together to obtain the angle I J V in plan, while the cut L N is the one to which the pattern for sides shown in diagonal elevation will be soldered. For obtaining the pattern required for the sides of the diagonal bracket proceed as follows: On the diagonal line E F in plan, Fig. 2, are shown the intersections obtained from points in the molding and profile of bracket in elevation, and numbered to correspond with those in the elevation. Take a tracing of the diagonal line C F in plan and place it with the numbered intersections, as shown by E' F', parallel to the dotted lines previously drawn. As the section on the center line is the same as the side of the diagonal bracket, the center line J' F' is made use of in place of the side Y' Y'' from which to obtain the pattern of the raking side.

Now at right angles to the line E' F' and from the points thereon draw lines upward intersecting horizontal lines of similar numbers. Thus, lines drawn upward from the intersections 1, 2, 3, 4, &c., on the line E' F' intersect with horizontal lines 1, 2, 3, 4, &c., while lines drawn upward from the intersec-

H in Fig. 3. Connect the joints E, H and F; then will the profile E H F in Fig. 3 represent the angle of the hip at right angle to its rake and will be the profile required (as shown by E' H' F' in Fig. 4) when bending the flange on the face of the bracket and when soldering the face together. Now, parallel to B L in Fig. 3 and through the point E draw a line, as shown by I K. Then will the angle E I J in Fig. 3 represent the profile required for bending the flanges on the side of the bracket, the profile being shown in position for the outside flange, by E' I' J' in Fig. 4. Fig. 4 is a perspective view of a finished diagonal bracket laid on its side, so as to clearly show the face and the use of the profiles before described. V, V, V, V, represent flanges; those on the face are formed at right angles, while the others are bent according to the profiles obtained in Fig. 3.

The National Sheet Metal Roofing Company,

339-341 Grand street, Jersey City, N. J., are established in a new building and are prepared to furnish roofing supplies of every character and their spe-

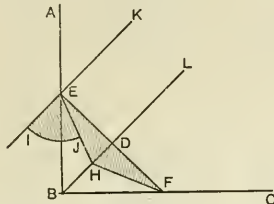


Fig. 3.—Method of Obtaining Profile for Bending the Flanges.

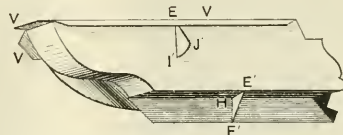


Fig. 4.—Perspective View of a Finished Diagonal Bracket Laid on its Side.

PATTERN FOR A DIAGONAL RAKING BRACKET UNDER A HIPPED ROOF.

bracket A in elevation, as shown by the small figures 1, 2, 3, 4, &c., and through these points draw perpendicular lines upward indefinitely, and downward until they intersect the miter line E F in plan.

Through the same points in the profile of the bracket draw horizontal lines to the right indefinitely, as shown by the dotted lines 1 1', 2 2', 3 3', &c. Now parallel to the perpendicular lines drawn through the profile of the bracket draw the stretchout line H G, upon which place the stretchout of the profile of the bracket A in elevation, as shown by the small figures 1, 2, 3, &c., on the stretchout line H G. At right angles to H G, and through the small figures, draw lines intersecting those of similar numbers drawn upward from the profile of the bracket A. By tracing a line through these intersections, as shown by K M, the miter cut is obtained.

Set off the distances K L and M N, equal to I J or J V. Now trace the miter cut K M, as shown from L to N; then will K L M N represent the pattern for one half the face of the diagonal bracket shown in plan by I J or J V. The two dots shown on the pattern indicate the bend. As two of these half faces are required to complete the single I J V in plan in Fig. 2, one will be formed right and the other left, corresponding to the profile shown at A in elevation. Care should be taken when forming to hold the profile at right angles to the lines K L or M N

tions 1, 2, 3, 4, &c., on the line E' F' intersect with horizontal lines 1, 2, 3, 4, &c. A line traced through these points of intersection, as shown by O R B P, will be the pattern for the side of the diagonal bracket. From the point X in elevation draw a solid horizontal line, as shown by X X. From the point E' in plan below diagonal elevation draw a perpendicular line upward until it intersects the solid line X X at Y; extend the line P O to Y, as shown. After having the pattern for the face and side of the bracket, it will be necessary to obtain the profiles for bending the flanges on the face and side of the bracket. At first sight this is overlooked, but is necessary when bending the flanges and finishing the bracket. To obtain these profiles proceed as follows: Upon the solid line X X in diagonal elevation in Fig. 2 establish any point, as T. Through the point T and at right angles to Y P draw a line intersecting the line Y P at U.

As the plan shown in Fig. 2 is a right angle, then construct a right angle, A B C, Fig. 3; bisect the angle A B C and obtain the miter line B L. Now take the distance from Y to T in diagonal elevation, Fig. 2, and place it on the miter line B L in plan, Fig. 3, from B to D. At right angles to B L in Fig. 3 draw a line through the joint D, intersecting the sides of the right angle A B C at E and F. Now, take the distance T U in diagonal elevation, Fig. 2, and place it as shown from D to

cialties at short notice. In front of the building is a statue of a schoolboy, mounted on a pyramid covered with Walter's patent standard metallic shingles. One of the large plate glass show windows which are on each side of the entrance displays a variety of relief ornaments for cornice work and a line of their special finials. The other window is arranged with various styles and widths of building paper, forming a support for a large sheet metal eagle with outspread wings. At one side of the building is a show board on which the Walter, Clover Leaf and Queen Anne tiles are displayed in the various sizes—7 x 10, 10 x 14 and 14 x 20. At the top of the building the cornice itself is a handsome display of architectural sheet metal work. On entering the building the office is found at the right, and the front portion of this floor is used for assembling the goods preparatory to shipment. The back part of the building is used as a press department, over 20 stamping presses being run with power from a gas engine for stamping the various designs and sizes of tin, galvanized iron and copper shingles. The second floor of the building is used for a painting shop and drying room and for the storage of stock after being made ready for shipment. At the back part of the building and extending across one end a third story is built and used for a galvanizing and tinning department, and is provided with a steam boiler for heating the baths and

for furnishing steam for the drying coils. After the shingles have been stamped in the black iron they are washed and transferred to the pickling tank. After receiving a coating of tin or zinc they are given two water baths to remove the flux, and they are then arranged on racks made of piping, through which steam circulates for drying them. The plant can readily turn out 400 squares of roofing material in a day.

Metal vs. Earthen Tiles.

All who have had experience in the roofing business know that owing to the weight of a tiled roof a much more substantial foundation is required for it than is necessary for a metal roof. At the present time there is a disposition to use freely the tiled effect in architecture, and it has been pointed out that it can be supplied more advantageously through the use of metal than with the earthenware red tiles so largely used in the older countries. It has been stated by an authority that a red tiled roof can be furnished at \$30 a square and will place on the building a weight of 600 pounds per square. It is claimed that at the present price of copper the same effect can be gained by the use of copper tiles at a considerably less cost and at a weight of about 150 pounds to the square when 16 ounce copper is used for the tiles. Either tin or galvanized iron tiles can be secured at a less cost, and where they have been used they clearly demonstrate that they make an excellent roof, free from leaks and attractive in appearance. It is stated that even in the cyclone district a roof of metal tiles is seldom blown off, as the wind pressure that can get under any one tile has no effect on those near to it.

Sheet Metal Front.

The accompanying illustration shows a sheet metal front recently executed by J. F. Barber & Co., Hazleton, Pa., for the lodges of the Junior Order of the United American Mechanics of Hazleton. The facade is made of sheets of iron put together in imitation of flat stone, the plies being grooved and locked together. The fluted pilasters are made of No. 24 galvanized iron. The cornice at the top projects 30 inches and is made of sheet metal, as well as the shield and other ornaments shown in the illustration. The eagle is a piece of sheet metal work furnished by W. H. Mullins of Salem, Ohio, while the two other figures were from the J. L. Mott Iron Works.

FLASHINGS.

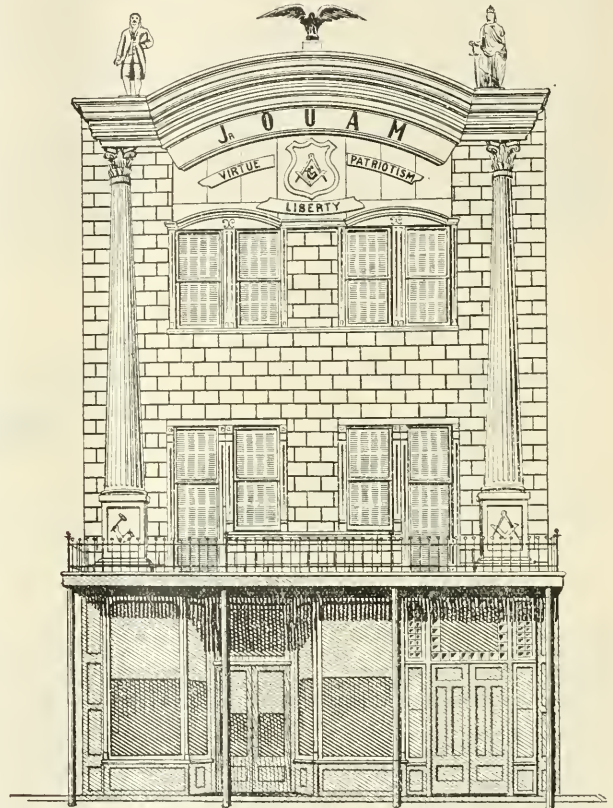
THE NATIONAL ASSOCIATION OF TIN, SHEET IRON AND CORNICE WORKERS, which held a convention at Indianapolis, Ind., will hold its next convention in Detroit, Mich. The association elected the following officers: General president, T. J. Ritter, Chicago; first vice-president, Joseph Harman, Duluth, Minn.; second vice-president, W. F. Gilmore, Toledo, Ohio; general secretary, James F. Hughes, Pittsburgh; general treasurer, James H. Horan, Louisville; chairman of the Executive Board, Joseph Harman, Duluth; Executive Board, J. F. Griffin, St. Louis; James Somers, Cincinnati; Frank E. Truchet, Fort Wayne, Ind.; H. H. Brough, Peoria, Ill.; delegate to the American Federation of Labor, J. C. Stuhlman, Grand Rapids, Mich.; general organizer, George M. Hockett, Indianapolis.

THE CATALOGUE just at hand from the Kanneberg Roofing Company, Canton, Ohio, is bound in more than ordinarily attractive covers. The decoration is an embossed design embracing the name of the concern, and the color treatment is very pleasing. The trade, however, will be more particularly interested in the contents of the volume, which relate to the sheet metal goods manufactured by the Kanneberg Roofing Company. In a prefatory note they mention that in this edition of their catalogue they have omitted the old time usage of uninteresting descriptions

ventilators and the like. Part three gives instructions for applying beaded, crimped and corrugated steel to its various purposes, as well as steel roofing, gutters, shingles, weather boarding, &c.

FRED. W. NOTTINGHAM New Haven, is to build a store that will have a sheet metal ceiling.

DEALERS IN ROOFING MATERIAL in New York City report a better business during the last week or two, although it is not yet up to the standard for the season. Nevertheless, the trade



Sheet Metal Front.

and wordy and confusing statements, giving instead in as few words as possible accurate and actual information, together with price-lists and illustrations of the goods. They have followed out this plan faithfully and as a result the publication is not overburdened with letterpress description, but instead the goods are presented to the eye by carefully executed engravings and brief technical descriptions. The catalogue is divided into three parts. The first relates to beaded, crimped and corrugated steel trimmings, fire proof doors, gutters, rock and brick siding, steel roofing, metallic shingles, steel weather boarding and similar goods. Part second is devoted to conductor pipe, crestings, eave trough and hangers, finials, gutters, cut offs, coping,

look forward with encouragement to an exceedingly good summer business, as the amount of building commenced and in prospect in this section is unusually large.

THE LITHO CARBON RUBBER COMPANY, 130 Fulton street, New York City, report a large and growing demand for their preservative paints, japans and varnishes. They claim that as a preservative paint for iron, tin or other metal Litho-Carbon is exceedingly effective, preventing rust, leaking or wear. It is also recommended for gas pipe and iron castings, as well as for shingled roofs, &c.

JOHN G. TAIT & Co., 100 Mulden lane, New York, manufacturers of roofing felts, coal tar products, water

proof building paper, &c., with factory at 148-150 N. J. R. R. avenue, Newark, N. J., report a very satisfactory demand for their roofing specialties, in which they are offering the trade some new lines this season.

MERCHANT & CO., INCORPORATED, Philadelphia, issue a card in somewhat violent contrast with their usual advertising publications. It is an engraving showing a building, the front part of it broken away and in the last stages of dilapidation and bearing the firm's name over the front door. The occupants are those strange little people of Palmer Cox's creation and who are becoming identified with Merchant & Co.'s specialties. Incidentally, attention is directed, by means of signboards about the building and its neighborhood, to some of Merchant & Co.'s goods.

HENRY HENNINGSON of Jersey City, N. J., is putting a red tile roof on the new City Hall Building, covering the towers with copper and erecting a handsome sheet metal cornice.

JACOB RINGLE of Jacob Ringle & Son, 83 Newark avenue, Jersey City, N. J., has recently returned from a visit to Germany. One of the contracts which the shop is busy with at the present time is a roof and a handsome sheet metal cornice for a church at Yonkers, N. Y.

THE NEWARK SHEET METAL WARE COMPANY, Newark, N. J., have recently received from the Hay Foundry & Iron Works a large cast iron zinc pot for their galvanizing plant, which is to enable them to galvanize gutters and conductors in 8 foot lengths. This pot is of a peculiar shape. The top portion is rectangular, measuring 2 x 3 feet and about 1 foot deep. From the center of this there is a circular pot about 12 inches in diameter and 8 feet deep. This pot will be set in brick work, arranged with a grate and fire chamber at the bottom, to keep the metal within in a molten state. The company also make a line of galvanized sheet iron stove and furnace pipe and adjustable elbows. They make a specialty of valves and plungers for sheet metal pumps. In their cornice department they are finishing the work for the Passaic Electric Railway Company's power house at Secaucus. They are also doing the cornice work on the new school building at Paterson, N. J.

THE GARRY IRON & STEEL ROOFING COMPANY, Cleveland, Ohio, are just finishing the last iron building for the United Salt Company of Cleveland, Ohio.

THE ILLINOIS ROOFING & SUPPLY COMPANY suffered some damage to their stock from water on the 17th inst., owing to a fire which occurred on the upper floors of the building occupied by them at 203 Lake street, Chicago. While the company necessarily suffer some inconvenience, they are not prevented in any way from continuing in business or from promptly filling orders, being ready as before to make shipments from Chicago. They have just issued some attractive circulars calling attention to their specialties. Gilbertson's Old Method, Illinois Old Method, and E. L. roofing tin, Perfection folded lock seam steel roofing, and general roofing supplies.

THE RECENT INCREASE in the demand for slate has caused several old and abandoned quarries in Slatington, Pa., to be reopened and worked again. One old quarry in Slatington, aban-

doned nearly 40 years ago as profitless, is already being operated by a company who claim that the slate is excellent and the supply ample.

THE DECATUR STEEL ROOFING COMPANY, Decatur, Ill., have issued a new catalogue illustrating and describing their products. They are manufacturers of the Jones & Bonbrake patent folded lock seam steel roofing and Bonbrake's patent single fold steel roofing, separate cap roofing, pressed seam roofing, corrugated roofing, V crimp roofing, corrugated siding, corrugated and beaded ceiling, steel clapboards, pressed steel brick, eave troughs and other roofing supplies. Very full directions are given for laying roofs, and essential points are plainly illustrated. Much attention is paid to sheet metal siding, plain and ornamental. Those who are looking for designs in which to finish metal fronts will find a number of them in this catalogue. Cornices and galvanized window and door caps are shown in great variety, as well as ridgings, finials, &c. The book comprises 64 pages.

Trade School at Springfield, Mass.

In *The Metal Worker* of November 17, 1894, reference was made to the establishment of a trade school department in connection with the Springfield Industrial Institute, Springfield, Mass. The initial course of the school, which embraced five different trades, opened in temporary quarters last fall and closed on March 30 last. Its results gave great satisfaction to the promoters of the undertaking. The course of instruction consisted of evening classes in carpentry, wood carving, bricklaying, plumbing and sign painting.

Programme for Season of 1895-96.

We are glad to learn from circulars, forwarded to us by the institute, that in the forthcoming season of the trade school, opening on October 2, 1895, its operations will be considerably extended. Both day and evening classes are to be held; and their number will be increased, including, in the day classes, instruction in plumbing, bricklaying, plastering, stone cutting, sign and carriage painting, cabinet making, pattern making and machine shop practice. Evening instruction will also be given in all these branches, and, in addition, classes will be opened in electricity, tinsmithing, engraving and blacksmithing. A fine new building is in course of construction on a suitable location on the Boston road, between Winchester Park and the New England Railroad. The building will contain a carpentry shop, machine shop, forge room, iron and brass foundries, plumbing shop, shops for bricklaying, plastering and stone cutting, physical and chemical laboratories, mechanical and free-hand drawing rooms, recitation rooms and a large assembly hall.

The trade school, which is only one of the five departments constituting the work of the institute, is under the direction of L. P. Strong. In each of the trades offered a graded course of instruction has been laid out, beginning with elementary work and progressing to the more difficult and complicated stages. The manual instruction is in the charge of skilled mechanics. Theoretical instruction is also given by means of lectures and diagrams. The day classes, which cover a period of from four to six months (the time varying in

different trades), are open daily, during the working week, from 8 a.m. to 5 p.m. The evening classes are intended more for the benefit of young men who are already engaged in trades, but who are desirous of improving themselves. These classes cover a period of six months, the ground traversed being very similar to that of the day classes. In general principles the curriculum throughout the school is founded on the New York Trade School system. At the termination of the courses of instruction, in both day and evening classes, examinations will be held and certificates awarded to those who pass.

Plumbing Instruction.

In the day plumbing class instruction begins December 2, 1894, and continues until April 1, 1895, the session being from 8 a.m. to 4 p.m. A fee of \$45 is charged, to be paid when the name of the pupil is entered. The course of instruction followed includes manual work, such as practice in lead seams, overcast joints, calking, joint wiping of all kinds, traps, setting basins, boiler work, sand bends, &c. In addition to the manual work, scientific instruction will be given in the proper arrangement of surface and waste pipes, and in drainage and ventilation, as follows: Drain, soil and waste pipes, trapping and ventilation of the same, supply pipes, boilers, tank fixtures, trapping and ventilation of fixtures, pumps, &c. Instruction will also be given in the best method of keeping plumbers' books, and a portion of the time will be set apart to teach mechanical drawing. The last named feature is one which is included in each trade course taught in the school. The plumbers' classroom is fitted up with all the appliances of a first-class modern shop.

Machine Work.

The instruction in machine shop practice covers a longer period than that in any other trade course, beginning in September and ending in August. It is, however, a very exhaustive one, embracing not merely machine shop practice but also mechanical drawing, blacksmithing, instruction in the charge of engines and boilers and other matters which are calculated to give the pupil a thorough education as a machinist, with good knowledge of mechanical engineering. The facilities for carrying out this course are said to be very complete. The machine shop is 100 x 50 feet, and is thoroughly equipped to do all kinds of work.

Accommodation for Pupils.

A commendable feature of the institute, which was first adopted in connection with the New York Trade School, is the announcement that living accommodations are offered for pupils, at very low prices, in the institute itself. Furnished rooms, lighted and heated, can be had at from \$1 to \$1.50 a week. Board is also provided at \$3 a week. By this means pupils from distant parts of the country are given a comfortable home at reasonable rates while working at their trades. The president of the Springfield Industrial Institute is David Allen Reed; the vice-president Milton Bradley.

Efforts are being made, it is said, to form a new cordage combination. Business has for two seasons been so unsatisfactory in this line that those interested are attempting to form an agreement on a fair basis whereby competition may be rendered less keen and an equitable range of prices be secured.

TIN PLATES.

SCRAP.

MORTIMER H. CORT, 9 Burling slip, New York, is mailing to the trade and his customers small samples of "Cort's Old Style" IC roofing tin, together with a card calling attention to the merits of the same. Each sheet of "Cort's Old Style" is stamped and resquared and heavily coated with metal. These plates, which are specially made for Mr. Cort, are strongly recommended by him for high class work.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., will, it is said, soon add five new mills and eight new tinning stacks, thus increasing their plant one-third and affording employment for about 1000 hands in all.

A PRESS DISPATCH from Duerkirk, Ind., asserts that a new tin plate plant, furnishing employment to about 800 men, will shortly be erected at that place.

WORK has been begun on a new tin plate factory at Franklin, a suburb of Elwood, Ind. The new works will be a four mill plant, employing about 300 hands. It is expected that it will be ready for operation by September.

THE MANAGEMENT of the Beaver Tin Plate Company's works, Lisbon, Ohio, have decided to run their mill non-union on account of the refusal of certain of their union employees to enter into any agreement in regard to the wage scale and other matters, as desired by their employers.

THE buildings of the new National Tin Plate Works, Anderson, Ind., have all been completed. The machinery is now being installed and the plant will be ready for operation by July 1.

THE ANDERSON FOUNDRY & MACHINE COMPANY, Anderson, Ind., have begun the construction for the Monongahela Tin Plate Company, Pittsburgh, Pa., of what is said to be by far the largest tin plate picking machine ever built.

IN the last quarterly list of American tin plate manufacturers, printed in *The Metal Worker* of April 6, omission was made of the name of the Buhl Stamping Company of Detroit, Mich., who have been for several years manufacturing bright tin plates for their own use in the manufacture of milk can stock, to which their factory is largely devoted. They have from the start used nothing but back steel sheets tinned by the palm oil process in their own works. Their tinning equipment consists of three sets, which have put out a steadily growing tonnage year by year. The company advise us that this year's output has been so far larger than ever before, and the quality of their plates has improved in an even greater ratio.

AT THE OFFICE of Geo. H. Ismon, 277 Broadway, New York, agent for the Falcon Tin Plate & Sheet Company, Niles, Ohio, are displayed some handsome samples of the tin andterne plates manufactured by that concern, consisting of coke and charcoal bright plates and six grades of

terne plates. These plates are specimens of some of the first material produced by the Falcon Company after the starting of their tinning department, and do not at all suffer by comparison with the imported brands to which they are claimed to correspond. The Falcon Tin Plate & Sheet Company's works are reported to be now in full operation in all departments. The quality of their black plates has long been acknowledged as being of the best, and the finished plates promise to keep up the high reputation of the firm in this field.

THE STIRLING COMPANY of Chicago have just filled a third order for a 350-horse power Stirling boiler for the American Tin Plate Company, Elwood, Ind.

THE PENNSYLVANIA TIN PLATE COMPANY of New Kensington, Pa., have their plant in a very forward condition of progress and expect to begin rolling black plates very shortly. The plant consists of two double hot roll mills and two double cold roll mills. The tinning department will include seven sets for bright plates and three forterne.

SEVERAL of the daily papers have been commenting on the employment of women as separators at the mills of the Monongahela Tin Plate Company, Pittsburgh, Pa., and the Blairsville Rolling Mill & Tin Plate Company, Blairsville, Pa., which circumstance they regard as an undesirable innovation. This kind of work has for long been done by women in the Welsh mills. It consists of separating or opening the black plates as they come from the shears, and hitherto has been done in this country by boys.

IN the manufacturers' column of the Brooklyn *Standard Union* of April 20 appeared a very excellent portrait of Jacob Meurer, senior member of the tin plate manufacturing firm of Meurer Brothers & Co., 575 Flushing avenue, Brooklyn, together with a very appreciative notice of this popular member of the tin plate trade. Mr. Meurer is highly esteemed among his fellow members of the Manufacturers' Association of Kings and Queens counties.

AT the beginning of March there were 340 tin plate mills in operation in Wales and Monmouthshire out of a total of over 400. According to the Liverpool correspondent of the London *Iron and Steel Trades Journal*, there were in the second week of the current month only about 100 of these mills at work, owing to the strike over the wages question and the efforts now being made by the men's union to maintain the 36-box rule, which the makers generally have agreed to repudiate. The effort to put the prices up by a combination to restrict the make and cause a scarcity does not meet with the approval of the Welsh tin plate trade in general, as they regard such a proceeding as merely playing into the hands of the American manufacturers. It is looked upon as a significant and important feature of the situation that stocks of tin plates at shipping points are running down, being only about

two thirds of what they were a year ago, while the production is considerably less than it was at that time.

ONLY 39 tons of black plates for tinning were exported from Great Britain to the United States during the month of March, as compared with 451 tons in February, which itself was a very small figure, and 2277 tons in January. The total shipments of black plates to this country for the first quarter of the year were 2767 tons, according to the returns of the British Board of Trade.

THE GREAT WESTERN TIN PLATE COMPANY, Joliet, Ill., are now operating two trains of hot rolls and one train of cold rolls, with an annual capacity of 4500 tons of black plates.

THE ERIE CITY IRON WORKS, Erie City, Pa., have just sold a steam plant of 600 horse-power to the Ohio River Sheet & Tin Plate Company, Rochester, Pa., making the seventh large steam plant for tin plate works lately supplied by this firm.

A DISPATCH from Bellefonte, Pa., to the Philadelphia *Ledger* states that ex-Governor Beaver has been making some experiments, at his nail works plant at that place, with a new process for the production of tin plate. The experiments are now said to be complete and the General declares the process to be a complete success. The invention is the joint work of General Beaver and a Pittsburgh iron manufacturer. Application for a patent is pending, and it is stated that mills will be erected at Pittsburgh and Bellefonte to operate on this system, by which, it is claimed, the cost of making tin plates will be reduced to a minimum.

THE TIN PLATE MILL which is being built by the Laughlin Nail Company of Wheeling, W. Va., will be in operation in July. After that date the company will be in a position to furnish the Laughlin brand of black, bright andterne plates. The Laughlin Nail Company should not be confounded with the Laughlin & Junction Company in the same district.

THE project of erecting a tin plate plant at Beaver Falls, Pa., has been abandoned. The citizens of that place could not guarantee a sufficient supply of water, which is the main reason for the giving up of the enterprise.

The following mixture is said to have been used in England with great success for the cementing of iron railings, iron grates to stoves, &c., so effectively as to resist the blows of a sledge hammer. The mixture is composed of equal parts of sulphur and white lead, with about one sixth proportion of borax, the three being thoroughly incorporated together so as to form one homogeneous mass. When this composition is to be used it is wet with sulphuric acid, and a thin layer of it is placed between the two pieces of iron, these being at once pressed together. In five days it will be perfectly dry, all traces of the cement having vanished and the work having every appearance of welding.

The Field Triumph Filters.

Henry Giesel & Co., 43 and 45 Franklin street, Chicago, are manufacturing

creasing demand for water purifying apparatus capable of heavy service. Illustrations are herewith given showing the character of a few of the filters made by this firm. Fig. 1 represents a

daily. A reservoir or storage tank is attached to the right of the filter. For the purpose of more rapidly introducing such filters the manufacturers will for the present put them up on 30 days' trial for responsible parties. Fig. 2 represents an office filter connected with the city water supply, furnished with

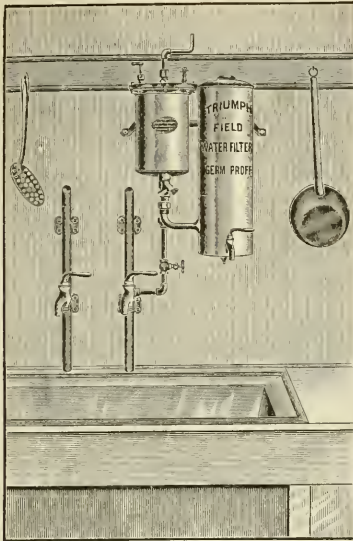


Fig. 1.—The Field Triumph House Filter.

the Field Triumph Germ Proof filters, which have recently been put on the market, but have already found their filter designed for use in private houses and intended to be handled by the plumbing trade. As shown it is placed

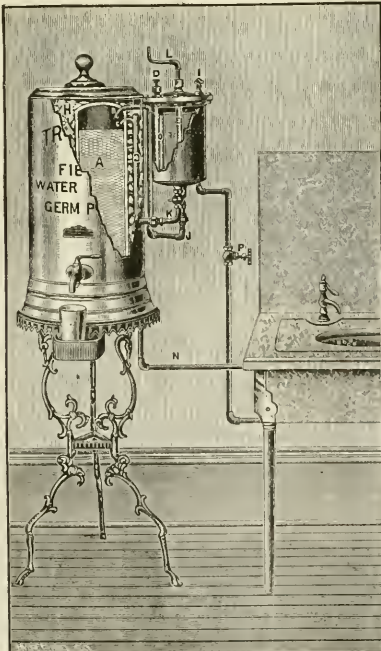


Fig. 2.—The Field Triumph Office Filter.

way into quite extensive use. These filters are designed for use under pressure, and therefore meet the rapidly in-

on a kitchen wall above the sink and connected with house water service. This will filter from 20 to 30 gallons

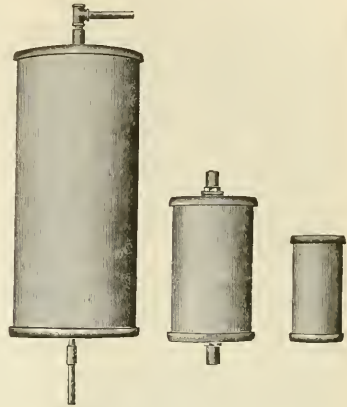


Fig. 3.—Filter Tubes.

a waste pipe to the washstand and further equipped with a water cooler of special design. The cut shows portions of the casing broken away to expose the interior. It will be seen that the water cooler is so made that the filtered water is preserved free from contact with the ice, so that any kind of ice can be used in it. The lettered parts are thus explained: A, filtered water in reservoir; B, filtered water to reservoir; C, overflow; D, handle for wash rod; E, perforated brass pipe (tinned); F, filtering tube; G, overflow; H, ice; I, vent on filter; J, water from filter to reservoir; K, pipe for flushing filter; L, handle for turning tube for cleaning; N, waste pipe to sink; O, wash rod; P, feed pipe to filter. The filter tubes are made in several sizes, as partially illustrated in Fig. 3. These are made of clay, of a very fine quality, and are baked in a kiln. Acid has no effect upon them. Heads for the tubes are made of cast iron, galvanized or enameled as desired, and are put on with pure rubber gaskets, the whole being subjected to water pressure before being put into the case to see that they are perfect. The method of cleaning the filter is very simple. Referring to Fig. 2, the handle L turns the filter tube, bringing it in contact with wash rods furnished with a thick strip of pure rubber. The muddy water is then drawn off at a faucet provided for that purpose. No part of the filter case need be removed to clean it. Special sizes are furnished to meet special requirements.

The lumber manufacturers and dealers on the Mississippi River have organized with the object of working in harmony and securing equitable freight rates to points of consumption both east and west of the river.

Suits have been brought by the Westinghouse Company against the General Electric and Stanley Electric companies for infringement of the Tesla patents, which are claimed to be the property of the Westinghouse Company.

(Continued from page 41)

THE FOLLOWING CONTRACTS for heating apparatus were awarded at a special meeting of the Building Committee of the School Board of St. Louis: Columbia School, Missouri Steam Heating Company, using their own system, \$6180. Charles School, Foss & Noble, using the Sturtevant system, \$9634. Benton School, John Ramming, using the Sturtevant system, \$6182. Riddick School, Branch Steam Heating Company, using the Sturtevant system, \$6421. Dumas School, John Ramming, using the Sturtevant system, \$6700; Froebel School, John Ramming, using the Sturtevant system, \$5840. It was decided to place a furnace temporarily in the Harrison School. The recommendation of the sub-committee to pay Professor Kinealy \$500 for his services as an engineer in investigating the school ventilating question was approved by the Building Committee.

THE STRADLING PLUMBING & HEATING COMPANY, Utica, N. Y., have been awarded the plumbing contract for the new Madison Barracks, at Sacketts Harbor.

THE COMMITTEE ON HEATING of the Board of Education, Newark, N. J., held a meeting last week. A contract for the placing of a new boiler in the Commerce Street School, the removing of a boiler from the Franklin Street School to the Elizabeth Avenue School and the erection of a boiler in the Thomas Street School was given to Lyon & McCabe for \$719. The contract for a boiler in the Chestnut Street School and the building of a chimney was given to J. H. Cornish.

B. H. CARPENTER of Wilkes-Barre was called in for consultation and to make a bid on the entire renovation of water closets and ventilation system of the school building at Mauch Chunk, Pa.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C. until May 22 for a low pressure, return circulation steam heating and ventilating apparatus for the U. S. Post Office building at Rockford, Ill. Drawings and specifications can be obtained from the Supervising Architect, Washington, or from the Superintendent at Rockford.

FREDERICK SCHOLEFIELD, 310 South California avenue, Chicago, has the contract for the plumbing and drainage in the flat building of W. Flynn, 4 Edgemont avenue.

ROBERT R. HEANTSCH, 5631 Wentworth avenue, Chicago, is to do the plumbing and drainage in the residence of T. C. Hageman, 4801 Langley avenue.

WILLIAM READ, 345 Forty-third street, Chicago, has the contract for the plumbing and drainage in the flat building of Aug. Hathan, Justine street, near Forty-fifth.

WALTER J. HOGAN, 1087 North California avenue, Chicago, is to do the plumbing and drainage in the flat building of W. Pierce, 1219 Rokeby street.

MINNESOTA is considering the erection of a new State Capitol Building, at Minneapolis, to cost \$1,500,000, including heating and ventilating plant and plumbing system. Bids for the building will be received up to August 5, 1895.

THE CONTRACT for heating the new county clerk's office with steam was awarded to John C. Sullivan of Oswego, N. Y., for \$1453.

Trade Notes.

THE BATES MFG. COMPANY, Birmingham, Ala., have been organized by George P. Bates and a number of other parties to manufacture utensils in Woodenware.

THE QUAST GAS & GASOLINE ENGINE COMPANY, an industry recently established at Bucyrus, Ohio, have commenced the erection of additional buildings which will accommodate about 50 more men. They expect to start operations next week, and are said to have already booked orders for 100 Engines.

THE AMERICAN UNDERFEED MECHANICAL STOKER, the new smoke preventing apparatus, is now being manufactured by the American Stoker Company, at Dayton, Ohio, and promises to add a flourishing industry to the Gem City.

WE HAVE an encouraging report from the Rutland Fire Clay Company, Rutland, Vt., that their sales are good and collections reasonably prompt, and as their business covers 35 States it is an excellent indication of the general condition of trade throughout the country.

P. H. KEEVAN of Kenosha, Wis., manufacturer of Brass Goods, will locate in Lorain, Ohio, occupying the buildings recently used by the Young Mfg. Company. His plant will employ about 50 men.

E. T. BARNUM, Detroit, Mich., is manufacturing wire signs with open net work of galvanized iron, to which painted metal letters are securely attached. The signs are made to order, from the smallest size to 300 feet in length, for use on stores, banks and factories; the larger sizes to be placed on the top of buildings. The smaller sized signs, to suspend, can be read from both sides. The manufacturer calls attention to the fact that the signs are not affected by fire, wind or weather.

THE NEW HAVEN COPPER COMPANY of 294 Pearl street, New York, where they have been located and doing business since 1850, will remove their office and salesroom to their mills at Seymour, Conn., on May 1, where they will fill all orders for Sheets, Copper Bottoms and Cast Steel Augers and Bits. Charles K. Hayes will still continue to represent them in the capacity of traveling salesman.

AUSTIN & DOTEN, manufacturers and dealers in Tin Plate and Metals, 92-102 North street, Boston, Mass., are offering a new brand of Black Sheet Iron, made especially for tinsmiths' work, under name Austin's Clean Refined, and it is to be sold at the price of ordinary refined. The special features of this brand are that it is particularly clean, soft and smooth, qualities that are generally appreciated by hand workers in Sheet Iron.

IN THEIR advertisement elsewhere in this issue the Beaver Tin Plate Company, Lisbon, Ohio, direct the attention of the trade to their Beaver brands of Charcoal, Coke and Terne Plates. The quality of these Plates is guaranteed by the firm and inquiries of the trade are solicited. In connection with the advertisement the trade-mark of the firm is shown, being a picture of a beaver perched on the top of a number of boxes of Beaver Plates.

P. J. CONROY, Paschall, Philadelphia, advises us that business in his

Refrigerator Fastener, which is well known to the trade, has been twice as large this year as last. He states that he has enlarged his facilities for manufacturing Refrigerator and Ice House Trimmings, which are the only goods he makes, and he is accordingly in position to fill large orders in that line very promptly.

THE CENTRAL STAMPING COMPANY, 23-25 Cliff street, New York, have for some time been making very extensive alterations and improvements in their large Tinware factory at Newark, N.J., some parts of which have been entirely remodeled. Among other features, a complete electric plant is now being introduced, and the tinning department is receiving special attention. When the alterations are completed, which will be in about two months' time, the Newark factory will, it is said, be one of the largest and most complete examples of a modern Tinware plant in this country. The company report that both their factories, at Newark and Brooklyn, are in steady operation with a very considerable volume of orders in hand.

L. M. DEVORE & Co, Freeport, Ill., is putting on the market a non-heating swell handle Lid Lifter, which is an improvement on the Lifter heretofore offered by the company. The principle is the same as employed in the former Lifter, but the handle is now made in a form more suitable to the hand and, where desired, a loop is added by which the Lifter may be hung up.

Bartlett's Thermograph.

The Bartlett Brothers Thermograph Company, 176 Euclid avenue, Cleveland, O., are placing on the market a patented thermograph for indicating temperature or to be used as a fire alarm. It is adapted for use in cold storage houses, public buildings and greenhouses. The device consists of a cabinet containing an electric switch-board, dials and push-buttons, to be connected with specially constructed thermometers placed wherever desired. The object of the device is to enable the janitor to find the temperature of any room of a large building without making a tour of inspection. By moving the switch to the number on the board corresponding to the room of which he desires to know the temperature, the hand will point to the temperature on the dial that is registered by the thermometer in the room. A fire alarm attachment is so arranged that when the temperature in a room reaches 100, it sets in operation a 10-inch vibrating gong located where it will attract attention. Such an apparatus installed in a nursery or greenhouse can be arranged to give the alarm when the temperature of any department has been reduced to a degree which is injurious to plants.

About 5000 New Jersey operative potters have organized a national union, which has been affiliated with the American Federation of Labor.

Bids will be received by T. H. Williamson, Homestead, Pa., until May 4, for the furnishing of 20 tons of 6-inch cast iron pipe.

The Japanese Government will, it is said, place in England orders for several war ships, to be built on lines suggested by the experience gained in the late war

STOVE TRADE NOTES.

The Stove Secretaryship.

We have received several letters recommending various candidates to the favor of the members of the National Association of Stove Manufacturers. After earnest consideration we decided to publish all these letters in this issue, so that the members of the convention, when they meet at Chicago next week, may have this interesting collection of epistles in complete form to ponder over, and it may perhaps assist them in coming to a satisfactory conclusion. On a careful perusal of the letters there would seem to be no difficulty in finding a person thoroughly qualified to fill the position of secretary. So many names are presented, however, that the difficulty would appear to lie in determining which of these ideal candidates to support. And yet perhaps the question may not be so complicated as one would suppose, because we understand that some of the persons named are not really candidates in the sense of personally seeking for the office. They have enthusiastic friends who would like to see them honored in being selected to fill the office, and who think that they would serve if they were called—to adopt a clerical phrase. We disclaim any partnership whatever in this matter, preferring to remain entirely neutral with regard to the individual candidates, and strictly refraining as in the past from any attempts to influence sentiment for or against any person. There may be a number of other candidates than those who are named in the accompanying letters. If so, their omission from mention among those here presented is simply because their friends have not favored us with a communication on the subject. The omission of a presentation of their claims for support is therefore not to be charged to us. The letters are as follows:

William T. Bradberry is Named.

Editor The Metal Worker:

Sir: I would like to call the attention of the members of the National Association of Stove Manufacturers and also of the Stove Founders' National Defense Association to a man who, in my judgment, is eminently qualified to fill the responsible position of secretary. The gentleman whom I have in mind is a practical manufacturer of over 30 years' experience in managing a stove business. He is conversant with every department, from the foundry to the counting house, and in all of them he is the peer of any man to be found to-day in the ranks of the stove manufacturers of America. He has for years been actively identified with the work of both associations, but has particu-

larly distinguished himself in the work of the Defense Association, assisting materially in the settlement of numerous disputed questions between manufacturers and workmen which might have led to grave troubles but for the interference of one so well informed and clear-headed. I write entirely without the knowledge that he would accept the position if it was tendered to him, but in my opinion he is the right man for the position, and his fellow members of the national associations might perhaps be able to prevail upon him to forego his personal interests for a time in looking after the larger interests of the trade in general which he has so long had at heart. I therefore take great pleasure in naming William T. Bradberry of Pittsburgh, president of the Anshutz-Bradberry Company, as my choice for secretary, and hope that my fellow members of the national associations will join with me in desiring him to serve.

Very respectfully,
STOVE MANUFACTURER.

Samuel T. Dickinson.

Editor The Metal Worker:

Sir: Your article on the stove secretaryship hit the nail exactly on the head. We want and must have a practical man as secretary in order to insure the satisfactory administration of the duties of this important position. He must not only be practical, but he must be in possession of other important qualifications, such as a ready pen, a fluent tongue and a natural propensity to keep abreast of the times and in touch with the advancement made in methods of doing business and handling important questions. These qualifications are all possessed in an eminently satisfactory degree by Samuel T. Dickinson, late of the Lehigh Stove & Mfg. Company, Lehigh, Pa. Mr. Dickinson is in the prime of life. He served an apprenticeship under H. M. Norton of Easton, Pa., learning the tinning trade as applied to stoves and hot air furnace setting. Seeking a wider field than that inclosed by the walls of a tin shop, he eventually became a traveling salesman for the stove house of Shantz & Keeley, Royersford, Pa. He was with this house for a number of years until the firm changed to Oliver B. Keeley & Co., and removed their works to Columbia, Pa. During this period he traveled through the Southern States, through the Central States, some through the Eastern States, and through the stove territory in the West which is adjacent to Chicago and east of it; so that he is familiar with the territory, the manufacturers, the people and the local workmen.

When the Keeley Stove Company were formed several general managers were tried, and Mr. Dickinson was finally taken off the road and placed in entire charge of the manufacturing plant, where he looked after the finance, credit and bookkeeping departments as well as the foundry, looking after the mixtures of the irons, the pattern shop and the employment of the men. A number of new goods which proved successful were brought out in his ad-

ministration. Mr. Dickinson next went to the Lehigh Stove & Mfg. Company, Lehigh, Pa., taking charge of this plant when it consisted of a cupola and a series of sheds and shanties, with a line of patterns which had been repudiated by the market and had brought the foundry to a condition closely approaching collapse. Mr. Dickinson took charge of the selling, the books, the mixtures, the foundry management and the production of new patterns, bringing the company to a profit paying basis. In many respects Mr. Dickinson is well qualified for the secretaryship. As a practical man he is certainly well equipped to discharge its duties. His literary qualifications are equal to anything expected from the one who shall hold this office. Further, he is accidentally and perhaps fortunately unattached at present, so that he is available for the place. If Mr. Dickinson will consent to be a candidate I am sure that he will be found to have a host of friends in the stove trade ready to support him for the position. Yours truly,
CONESTOGA.

Ex-Secretary T. J. Hogan.

Editor The Metal Worker:

Sir: It seems to me that this is not a good time to try new men in such an important position as that of secretary. The questions now coming before the trade for settlement require in their decision the ripest experience and the soundest judgment. Several times within the past year we were hovering on the brink of a volcano, not knowing at what minute an eruption would break forth. Thanks to temperate counsels and the coolness of those in charge of national matters all danger was averted, and for a little time we are permitted to see our way clear over a good road. But we are in the midst of unsettled times. Business is not yet in a healthy condition. The fever of unrest is in the blood of many. On the one hand are manufacturers who are anxious to increase their sales and make more profit out of their plant. On the other hand we have workmen whose earnings are very meager because they are not employed on full time, consequently they are not entirely contented and are too often ready to make exacting demands. Inasmuch as we have in our membership a man who has made a very acceptable secretary, I would ask, Why not endeavor to induce him to again take up the work and serve in that position? I allude to J. H. Hogan, now of the Bridge & Beach Mfg. Company, St. Louis. With him the work of the office would not be experimental. He would take up the lines as though he had just laid them down. Manufacturers and workmen all know him and have confidence in him. It would be a happy solution, indeed, if we were able to prevail upon Mr. Hogan to again take the secretary's chair.

Truly yours, VULCAN.

Samuel Smyth.

Editor The Metal Worker.

Sir: I understand that Samuel Smyth of Pittston, Pa., is a candidate for the position of secretary. As Mr. Smyth is

very well known to a large majority of the stove manufacturers it may perhaps be unnecessary for any one to write or plead in his behalf. I merely take this occasion, in view of the invitation recently extended by you, to say to the stove trade that if the convention should decide to elect Mr. Smyth secretary I believe the position will then be ably and very creditably filled. Mr. Smyth is familiar with all the details of the stove business, so that he is ready to take up the work of the secretary without loss of time in learning the ropes; and besides he has such a wide acquaintance among the stove men that he cannot fail to make himself highly useful to them. He is careful, thorough and prudent, not impulsive or easily influenced, and would make the association a very good secretary.

Respectfully yours, OAKWOOD

B. W. Dodson Is Nominated.

Editor The Metal Worker:

SIR: I most emphatically disagree with some of the conclusions reached in your editorial entitled "The Stove Secretaryship." Especially do I disapprove of the assumption that the secretary must be a practical man. I take it that you mean to say the secretary must, at some time, have worked with his own hands in a stove foundry, hustling flasks, screening sand, preparing molds, making cores, &c., or else he is not fitted for the position. Why you might as well say that a man cannot run any sort of a factory unless he had first worked at a bench or a machine in some part of it. This is absurd. There are many successful men to-day in all branches of manufactures who could not take the place of the humblest workman in their factories and turn out the work he is easily doing. They know when it is done right, and they know how much should be done in a given time, and they know what it should cost, but they couldn't do the work themselves if their lives depended on it. I would like to see Mr. Dodson elected to fill this position. He has all the qualifications for a capital secretary. He wields a trenchant pen, knows the stove trade through and through, has positive convictions, stands like a rock when he knows he is right, yet is ready to hear the other side and will deal fairly with all men. Perhaps he never actually put a pattern in sand with his own hands, yet that should be no bar when a man has the full knowledge of the business which Mr. Dodson possesses. I am not aware that he is willing to accept the position, but if he will take it there is no doubt that he will fill it to the entire satisfaction of the members of the stove trade. Yours faithfully,

LID LIFTER.

E. W. Peck Is Brought Forward.

Editor The Metal Worker:

SIR: The election of a secretary will be one of the most important matters to come before the approaching stove convention. It is highly essential that in this matter the convention should make no mistake. I have heard a number of names of possible candidates suggested, but none of them has struck me so favorably as that of E. W. Peck if he could but be induced to accept. Mr. Peck has the esteem and confidence of the entire trade in a remarkable degree. Few men, in fact, are so universally popular as Mr. Peck. He is a man of great ability and has at his fingers' ends all the knowledge needed for the successful discharge of the secretary's functions. If he would

consent to serve I venture to say that the association would look no further, but that everybody would say, "He is just the man we want."

Yours truly,

JOHN SMITH.

Albert Moffat Recommended.

Editor The Metal Worker:

SIR: Permit me to suggest through the columns of your valuable journal that Albert Moffat would in my estimation make an ideal secretary. Mr. Moffat is a veteran manufacturer, but his long years of service have not impaired his usefulness and he is to day one of the most vigorous and progressive men we have in our ranks. He is well known to the trade through his long connection with the Collins & Burgie Company of Chicago, a very successful concern, whose place in the trade would have long ago been much more prominent if Mr. Moffat had been permitted to give his energy full swing. He is a man of eminently sound mind and possesses the judicial faculty in a rare degree. He has practical knowledge, added to a most persuasive manner and a very original method of expressing his ideas, which carries conviction to the minds of his hearers. If Mr. Moffat is available, of which I am in some doubt, and would consent to be a candidate there are few men who could command a larger following.

Yours truly,

WESTERN MANUFACTURER.

Meeting of the Stove Associations.

Official announcement has been made from the secretary's office that the Stove Founders' National Defense Association will meet at the Auditorium Hotel, Chicago, Ill., on Tuesday, April 30, and that the National Association of Stove Manufacturers will hold their annual meeting at the same place on Wednesday, May 1.

Resolutions on the Death of D. M. Thomas.

At a recent meeting of the Stove Manufacturers' Association of Eastern Pennsylvania the following preamble and resolutions were adopted:

Whereas, Death has suddenly and unexpectedly removed D. M. Thomas, secretary of the National Association of Stove Manufacturers, from the field of his earthly labors.

Resolved, That by his death the stove manufacturers of the United States have suffered an irreparable loss, and the members of the Stove Manufacturers' Association of Eastern Pennsylvania are called upon to mourn the departure of one, formerly a member of their organization, for whom they had the highest and most sincere regard, and who for many years evinced a special personal and official interest in the welfare of the stove manufacturers of this district;

Resolved, That no acknowledgment of his labors as secretary of the National Association of Stove Manufacturers can adequately express the value of the service he rendered to the stove manufacturing industry of this country by the keen intelligence, the remarkable energy and the unceasing industry with which he discharged the duties of his important position;

Resolved, That the influence of his arduous labors for the promotion of

friendly relations and unity of policy among stove manufacturers will long be felt as a salutary force whose benefits it is not possible to estimate;

Resolved, That we extend to his stricken family the assurance of our sympathy in the great bereavement and sorrow that have come to them through the sad and untimely death of the husband and father who was so dear to them.

W. S. STEVENSON, President.

CHARLES S. PRIZER, Secretary.

WM. M. STAUFFER, Treasurer.

WM. L. McDOWELL,

FOR STOVE MANUFACTURERS' ASSOCIATION OF EASTERN PENNSYLVANIA.

The Ohio Stove Trade.

Encouraging reports of the present and hopeful views of the future are characteristics of stove founders, as they are of other lines of business at the moment, and the same stimulus which has awakened trade in produce has made an impression in the stove industry. For the past month or six weeks the progressive foundries have been busy changing old patterns or creating new models, either to comply with trade requirements made necessary by competition or horn of a desire to lead in the business by anticipating reforms which would be required by the more general realization of what is useful, comfortable, economical and healthful.

Those who have succeeded in perfecting their new fall lines have already obtained valuable points respecting the selling qualities of their specialties, and many new and handsome cuts and catalogues which are coming to hand indicate that manufacturers are wide awake. At not a few foundries stocks of fall goods are being prepared, in all stages of process from the sand to the mounting room, giving fuller and more satisfactory employment to all hands. The general verdict is that the spring trade has been better than it was in '94, and not a few foundries report favorable comparisons with two years ago. Salesmen who are testing the market and already canvassing some for fall goods send encouraging reports to their principals respecting the outlook.

For once, at least, the active foundryman who has taken time by the forelock—succeeded in being ready—has the satisfaction of knowing that the goods prepared with such care are about to appreciate in value, and the prospect of larger profits as well as increased trade is a pleasant one to contemplate.

Pig iron of all grades has risen, and the tendency is for a further advance. In fact, another rise of 25 cents per ton is momentarily anticipated. The upward movement has already stimulated the buying, sales in this section during April being equal to, if not exceeding, those of March, when the largest sales in the history of the trade were made. In some respects the April buying is more significant, as the contracts were of smaller individual amounts yet equal

in tonnage. In March pipe works bought heavily, while in April it was the general trade and smaller consumers that contracted. The outlook is certainly bright and there is every reason to feel encouraged.

The Wage Question at Dowagiac.

We have the following letter from Fred. E. Lee, general manager of the Estate of P. D. Beckwith, Dowagiac, Mich.

I have read with considerable interest the article in your last issue headed "Dowagiac Restores Wages," and I beg to say that the report as given by you is more or less correct, but the situation is this: As you know, we made a reduction in the price of our stove, believing that with the extreme low price of raw material and the great purchasing power of a dollar stoves should share in the general reduction of manufactured articles. As you know, we run a shop making only Round Oak stoves, and it does not require the skilled molder to do our work that it does to make a full line of goods, and further, our appliances are better than those in any shop that I know of. We made a reduction in our wages of about 10 per cent., and this would allow our molders to make \$2.90 a day, which, for our class of work, I still feel is a fair wage considering the times. Of course you will understand that the stove manufacturers tried to get us to advance our selling price to something near the basis of last season, but in our judgment we did not think it was the proper thing to do, so declined. You will remember that this took place about the middle of January and we had reduced the wages the middle of December, when we started up for this year's run, and as far as I know all the men were well satisfied with the wages we were paying; but within a few days after we had given our final answer to the other manufacturers about our selling price trouble began to be stirred up in our factory by parties from abroad, which finally culminated in so much dissatisfaction that I closed the works for a couple of weeks to give our molders an opportunity to think the situation over. Then I gave them notice that we were going to start the plant on a certain Monday morning and we would like to have them come to work, but all the Union men staid out. I filled the places with new men taken from the inhabitants of our city whom we taught how to do our work. These new men were not molders at that time, but owing to the skill of our foremen and the excellence of our appliances they were soon able to turn out our usual amount of work and to do it just as well as it had been done by the old men, and so far as we were personally concerned the strike situation was very soon settled. But it appears the other stove manufacturers demanded of the Iron Molders' Union a reduction of 15 per cent., to take effect the 6th day of May, and based their request on the fact that we had made a reduction in our wage scale, otherwise they would not ask it. Well, after a number of conferences with the officers of the Iron Molders' Union we determined that we did not desire to be instrumental in reducing the wages in other shops, and it was satisfactorily proven to us that in case we restored the wages of 1894 the molders of the other factories would be paid the same old wages. In view of these facts we restored the wage

scale of 1894, to take effect the first day of May, we to retain all the new men in our employ that were competent to do our work. Of course, in filling vacancies, should any occur, we expect to give the preference to the old molders.

Now, I have gone into this matter to considerable length, but this is the exact status of the affair, and I will further add that the fact that we have restored the wage scale of 1894 will not cause us to advance our selling price, as we have improved our appliances this last year to such an extent that we think we can make a little money at the prices we are now selling, and in the present depressed condition of business in the country we think our position is the just one to take.

ODD PLATES.

A LETTER from J. Elwood Yeager, 56-58 North Second street, Philadelphia, sales agent for the Spring City Stove Works, states that he is rearranging his sample room and giving it a thorough overhauling, adding some new show tables and refreshing its appearance with a coat of paint inside and outside on the front of the building. He is displaying a full line of Jewel gas and gasoline stoves. He is also showing the Splendid oil cooking stoves and the Puritan lamp stoves and gas hot plates. He makes a specialty of lamp and oil stoves for both heating and cooking. Samples of the New Era line of ranges and parlor stoves for coal still occupy a conspicuous position.

J. CHESTER WILSON read a paper on electrical heating before the Engineers' Club, at Philadelphia, last Saturday evening.

THE NORTHFIELD FURNACE COMPANY is the name of a concern which has just been organized in Minneapolis, Minn., for the purpose of manufacturing the Riddell wood and coal furnaces, steam cookers, tank heaters, &c. We understand that the new concern will erect a factory on Mill square, near the Post Office, in the city named. The organizers are W. H. Riddell and W. W. Maguire.

THE STANDARD RANGE & STOVE COMPANY, which recently consolidated with the Terra Haute Stove Works, Terra Haute, Ind., are now in operation and turned out their first range during the week ending April 13. E. J. Kinz, the former owner of the old works, is said to have sold his interest in the new concern, and the superintendency of the foundry has been given to James Boyle, who hails from Salem, Ohio. The new plant is running with a force of 25 men, and the stoves turned out are attractive in appearance, while constructively they embody a number of novel features.

THE ECLIPSE STOVE COMPANY, of Mansfield, Ohio, are distributing folders illustrating and describing some of their leading specialties, prominent among which may be noted the Neptune Eclipse four-hole wood range, with all modern improvements. The ornamentation is neat, yet effective, and the construction first class in all respects. Another novelty is the Veata Eclipse, a four-hole cook stove for coal, made with extra large flues, cut top, interchangeable end linings, draw hearth, shaking and dumping grate, patent oven door opener and nickel trimmings. The Model Eclipse is another attractive cook which the company have brought out for burning wood as a fuel. This is made in six sizes, has ventilated oven, cut top and

center, heavy ring covers, draw hearth, &c.

JOHN G. WATKINS, formerly foreman at the works of the Littlefield Stove Company, Albany, N. Y., has accepted the position of superintendent of the molding department of the Baxter Stove Company, at Mansfield, Ohio.

THE STANDARD LIGHTING COMPANY of Cleveland, Ohio, have found it necessary to open a store at 54 State street, Chicago, in order to supply the increasing demand for New Process gas and gasoline ranges. The company have secured commodious quarters at the address given and they expect to occupy them on and after the first of May.

THE CHAMPION STEEL RANGE COMPANY, formerly known as the Superior Range Company of Cleveland, Ohio, have issued a folder illustrating the steel ranges which they manufacture. These goods are offered under the names "Champion" and "Marquart," and embody the modern improvements. The fire box is lined with 2-inch Savage fire brick and fitted with duplex grate. The oven is so braced that the plates cannot warp, while the oven opens down, forming a convenient shelf. The makers state that the door is so balanced inside that it can be opened and shut with the greatest ease, while the latch is closed with a spring and cannot be opened except at the pleasure of the operator. Various sizes of these goods are manufactured adapted to meet the requirements of family, hotel and restaurant use.

BRIDGE, BEACH & CO. of St. Louis, Mo., Portland, Ore., and San Francisco, Cal., are distributing circulars descriptive of some of the new goods that they are offering to the trade this season. Among the number is a new patent Franklin, designed for using coal as a fuel. It is made in three sizes, has round fire pot, heavy sheet steel back, heavy sectional linings above the fire pot, which support the deflector and protect the back, draw center shaking grate and large ash pan. The Superior wood base heater is another attractive novelty, possessing the modern features of construction, and is ornamented in a rich and artistic style. Nickel is judiciously employed, while the urn which surmounts the stove is a combination of bronze and nickel. The stove is made in two sizes, No. 22 taking wood 23 inches in length, while No. 24 takes 24-inch wood. Another interesting construction is the Superior steel range, which the company are offering in four sizes and numerous modifications. This is made of cold rolled wrought steel, has large, well proportioned oven, the bottom of which is of heavy No. 10 gauge steel which will not warp, drop oven door which forms a convenient shelf when let down, sectional top, large fire box fitted with improved duplex grate which is easily removed, drop feed door, extra large balled ash pan and polished copper reservoir having a capacity of 15 gallons. The company state that when pressure boilers are used they can furnish an L water heater, which is made extra heavy, tested to 160 pounds pressure and tapped for 1-inch pipe.

A CIRCULAR has been received of the Nugent moist warm air furnace, made by Thomas Nugent, 214 East 80th street, New York. The furnace is shown both portable and brick set, and is made with a fire pot lined with soapstone, each stone having its separate chamber, which is said to prevent overheating of the surface and excessive

dryness of the air which passes over it. A dome rests above the fire pot, from which indirect flues are taken, giving additional heating surface and causing the smoke to travel 30 feet before leaving the furnace. The furnace is also provided with a direct and indirect draft damper and special form of governor. One of the features of the furnace is the method of moistening the air. An evaporating pot is placed inside of the furnace in such a manner as to distribute the moisture throughout the furnace. This pot is connected with a tank on the outside of the furnace, which is supplied with water from the regular service of the building and controlled by a ball cock. A special evaporating attachment is also shown, by which each pipe on a furnace can have a separate evaporating pan, all being connected together by means of a 4-inch pipe which runs from them to the supply tank with its ball cock service. A door is placed in each of these moistening attachments by which examinations can be made when desirable.

GRAFF & Co. of 208 Water street, New York, commenced on Monday of this week running their works at Elizabeth, N. J., full time. For the past few months the foundry has been running only three or four days a week. The company consider the outlook encouraging for the furnace trade.

THE B. C. BIBB STOVE COMPANY, Baltimore, Md., after a shut down of about a month for stock taking and repairs, started up a few weeks since with a full force. We understand that on the 14th ult. there was a special meeting of the stockholders called for the purpose of modifying the by-laws of the company and also to elect a successor to the late president, B. C. Bibb. A. W. Stehman was elected president, and H. G. Carey, for many years connected with the concern, was elected a director. The company are this season making a specialty of nested stove pipe, a feature of which is an effective locking contrivance which prevents the pipe when put together from slipping, collapsing or crushing.

THE NOYES & NUTTER MFG. COMPANY, Bangor, Maine, have brought out a new wood furnace which they have named the Kineo. It is constructed in such a way as to secure great strength, heating capacity, a ready passage of a large volume of hot air and economy of fuel. Its arrangement of parts is such that the heated gases are freely admitted from the fire box into the radiator, which, with hot air pipes, is heated to a high temperature, thereby securing a ready passage of a large volume of hot air through the receiver of the furnace into the distributing pipes. The radiator of the Kineo furnace is made of steel, thus rendering it strong and durable.

F. P. GLAZIER & Co., operating the Chelsea Stove Works, at Chelsea, Mich., have practically completed the work of rebuilding the structures destroyed by fire in March, and at the date of latest advices expected to have everything in running order this week.

E. K. CONANT is closing out his gas stove business on West Fourteenth street, New York, preparatory to embarking in the real estate business at 206 Broadway, New York, on May 1.

C. EMERICH of Columbus, Ohio, write that they are adding a new line of four-hole ranges and four-hole cook stoves for wood, and a handsome low priced oak stove in four sizes to their

assortment. They have their full force at work at the foundry, and are turning out the usual number of stoves.

THE GRANDER STOVE COMPANY, Royersford, Pa., are making some additions to their line of ranges for the coming season. Venus is the name of a new six-hole high grade range with end hearth, elevated warming closet and with or without reservoir. Another new range is the Vigilant, a six-hole range in two sizes, similar in construction to their well-known Shiloh range. They will also have a new pipe shelf, designed especially for second-class ranges.

FLOYD, WELLS & Co., Royersford, Pa., will this season introduce, under the name Bright Rosemont, a new single or double surface burning square parlor heater with full nickeled trimmings and urn top. The firm are increasing the capacity of their works by the addition of some new machinery.

THE BUCKWALTER STOVE COMPANY, Royersford, Pa., are augmenting their line of ranges by the addition of the Sun Canopy, a new six-hole range, similar in construction to their Star Canopy. The same range with a solid end hearth will also be known as the Perseus Canopy. Their Apollo range is to have a new base and is to be re-ornamented. Their Art Canopy will also undergo a change in its ornamentation, and will have a cut top instead of a solid top as heretofore. Their line of heating stoves will be unchanged, with the exception of their Happy Greeting heater, which is being remodeled. The company have just completed arrangements with the Chicago Stove Company to handle their goods in the West.

IT WAS ERRONEOUSLY STATED IN *The Metal Worker* of April 20 that Moser, Wehrle & Co., Newark, Ohio, had shut down because of an overstock of stoves. We are advised that the reason for their closing was that they might make some necessary repairs and improvements in their plant that could not have been made while the works were in operation. We understand that the works are about to start again, and that the orders on hand are sufficient to keep them busy for a long time.

THE SAFETY FURNACE PIPE COMPANY, Detroit, Mich., issue a catalogue that is of more than ordinary interest to the furnace trade. It carries on its front cover the wise precept "Don't throw me in the waste paper basket. You may not need me to-day but to-morrow I may be of service to you." Those who keep the catalogue against the day when they find it necessary to use furnace pipe will be interested in looking over its pages. The first part is a general catalogue calling attention to the various furnace fittings which are illustrated and priced. The latter pages, or rather split pages, are arranged to show the combinations between various forms of pipes. By turning over alternately the upper and lower portions a very great variety of combinations can be effected and the relationship of the parts exactly shown.

THE UNION STOVE LINING WORKS, Taunton, Mass., were damaged by fire to the extent of \$2000 on April 24. The loss is covered by insurance.

THE MT. PENN STOVE WORKS, Reading, Pa., are working on some new goods which they expect to have in readiness for the coming season. They will also shortly place on the market a new system for heating small houses by hot water in connection with a kitchen

range. As the apparatus will possess some economical features the trade will no doubt be interested in its appearance.

MEMORANDA.

BUHL STAMPING COMPANY, Detroit, Mich., have issued a revised illustrated price-list of their "Buhl" cheese factory milk cans and milk can stock, including the Buhl patent "H" handle, their latest improvement, to which special attention is drawn in the circular. The milk cans are made in every known pattern and size.

RICHARD LYNEX, proprietor of the Penn Wire Works, 428 Walnut street, Philadelphia, has sold out his business, plant and stock to W. W. Shoe, who will continue the business at the same address. The new proprietor has made some alterations and improvements to the factory building and plant, and is calling attention to his facilities for supplying the hardware trade with dog muzzles, gas protectors, baskets and the usual line of wire goods handled by them.

THE ILLINOIS STAMPING COMPANY, Deering street and Archer avenue, Chicago, are installed in a large four-story and basement building, occupying a ground space of 60 x 100 feet. They will make a general line of stamped ware, including copper and nickeled utensils. The president is C. D. Milne, who was formerly manager of the Rochester Stamping Company, Rochester, N. Y. M. J. Barker is vice-president and C. A. Miller is secretary and treasurer, both men of practical knowledge of the business. The company have a capital stock of \$40,000.

THE CENTRAL STAMPING COMPANY, 23-25 Cliff street, New York, have issued under date of April 15, 1895, a new illustrated catalogue and price-list of Galvanized Sheet Iron Ware, including Wash Bowls, Baths, Fire and Water Buckets and Garbage Buckets, Ash Cans, Oil Cans, Dippers, Measures, Slop Jars, Tea Kettles, Pails, Dish Pans, Coal Hods, Watering Pots, &c. The company are now making one of the most extensive lines of Galvanized Ware of any concern in the United States.

WAVERLY STAMPING COMPANY, Waverly, N. Y., have begun the manufacture of a line of cooking utensils composed of aluminum and steel. The sheets are rolled separately, the combination being effected when the vessels are struck up. As the inner metal is entirely aluminum the manufacturers believe all the sanitary qualities are obtained, at the same time producing a substantial vessel not easily injured, at considerable decrease in cost, as compared with similar articles made entirely of aluminum. The handles are made of steel and tinned. So far the line manufactured includes Kettles, Sauce, Fry, Pudding and Milk Pans, Pie Plates and kindred articles of this character, the intention being to extend the line as is found advisable. The goods are marketed through the Avery Stamping Company, Cleveland, Ohio, as general sales agents, who are represented in New York and adjacent territory by W. W. Ferry, 88 Chambers street. A full line of samples will be found at the latter address.

The Chinese Government have concluded a large loan, at 6 per cent., from a syndicate of Hamburg bankers.

TRADE REPORT.

The Iron Market.

Those outside of the Iron trade seem to know more of an advance in prices than the majority connected with the industry. The feeling is undoubtedly better, but the newly acquired strength is not yet herculean. To some extent the actual advance in prices is masked, because the start has been made from a lower level than sellers have been willing to acknowledge. We have heard very little of record breaking prices during the last month, and that in itself is a proof of some improvement. The reason why higher cost, brought about by dearer raw material, has not been reflected by correspondingly better figures for finished goods is that the majority of producers are still working on cheap materials and are giving their advantage away.

Apparently furnacemen are resisting vigorously the higher prices for Coke, but even if the makers do not at once secure all they ask for they are sure to obtain a good raise above the starvation level of the last year.

Quite a lively business has been done in Southern Pig Iron, our Cincinnati correspondent noting sales of about 50,000 tons, of which 30,000 tons was done by one house. Chicago, too, reports a heavy business, both in local and in Southern Irons. It is probable that the majority of buyers were given a hint that a stand for higher prices would be made and were induced to avail themselves of options out. The leading Southern furnace companies announced a general advance of 25 cents per ton, and according to our Birmingham correspondent have actually made sales at an advance. In other markets the matter has not apparently progressed quite so far.

There is a rumor that a sale of 5000 tons of Southern Foundry Iron has been made for shipment to England. The report is not confirmed, however. We know, however, that a number of sample lots have been shipped to England and to Italy. Reports concerning them have not yet come to hand.

Pig Iron.—There has been a fair amount of business in New York and in New England at old prices. The Southern furnaces have advanced prices, but have not yet made any sales at an advance in this district. Quotations on Northern Irons have not changed. We quote \$12 @ \$12.50 for No. 1; \$10.75 @ \$11.25 for No. 2, and \$10.25 @ \$10.50 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.50 @ \$11 for No. 2; \$10.25 @ \$10.50 for No. 3; \$10.25 @ \$10.50 for No. 2 Soft, and \$10.75 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.75 @ \$10.

The feeling in the Philadelphia market is firmer, and it is believed that prices average 25 cents better than during the preceding month. One reason for believing that there is a genuine improvement is found in the fact that sellers are willing to admit things today that were carefully guarded secrets two or three weeks ago. There is more

business doing and prices average better than they did, but there is no buoyancy to the market. Sales have been at prices as follows for Philadelphia, and 30¢ @ 50¢ less for deliveries at points within 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.75 to 11.00
No. 2 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

A very heavy business is reported to have been done in local Foundry Iron in the Chicago district. Sales have comprised a number of round lots ranging from 1000 to 2500 tons for delivery through the year, while smaller trades were numerous. More business is in sight, so that the buying movement is by no means ended. Prices are very firm. Lively times have also been experienced in offices of Southern furnace companies. Firmness in prices and intimations of an advance caused buyers to come in freely to cover their requirements at existing rates and a great deal of business was booked for future delivery. Much of it was taken subject to acceptance by furnace companies, so that it is not known yet what the actual volume of sales has been. One instance occurred in which a large house directed its branch here to cease taking orders for the present. Prices on Southern brands have been marked up 25¢ per ton. Taking the week as a whole, it has been the most active period for perhaps two years. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$12.75 to \$13.00
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	13.00 to 13.50
Southern Silvery, No. 1.....	12.00 to 12.25
Southern Silvery, No. 2.....	11.75 to 12.00
Southern Coke, No. 2.....	10.25 to 10.50
Southern Coke, No. 3.....	9.75 to 10.00
Southern, No. 1, Soft.....	10.25 to 10.50
Southern, No. 2, Soft.....	10.15 to 10.40
Alabama Car Wheel.....	17.50 to 18.00

In the Pittsburgh market sales of Bessemer Pig were considerably less than during the preceding week and prices are 25¢ a ton lower. Foundry Irons do not improve, either in demand or prices. Quotations are as follows for cash:

No. 1 Foundry.....	\$10.25 to \$10.50
No. 2 Foundry.....	9.75 to 10.00

Activity and strength have been the most conspicuous features of the market for Pig Iron in Cincinnati during the past week. At the close of last week Southern furnaces advanced prices 25¢ per ton along the line. The fact that an advance was contemplated had already stimulated the market, and when the rise came there was a further rush of orders both for long and short deliveries. The past week in some respects has been a most remarkable one, especially for the large tonnage sold in a short space of time, one of the largest local factors having booked orders for 30,000 tons in three days. The total sales for the week for the entire local trade will be not far under 50,000 tons. Foundries and mills, large and small, have been in the market urgently demanding attention, and at the close were orders were coming in rapidly, as a further advance

is anticipated by both buyers and sellers. The smaller buyers are purchasing for quick delivery and other contracts run from three to six months. The market for Scrap Iron too has hardened and higher prices are now asked with an advanced demand.

Quotations are given as follows:

Southern Coke, No. 1.....	\$9.75 to \$10.25
Southern Coke, No. 2.....	9.25 to 9.75
Southern Coke, No. 3.....	8.75 to 9.25
Southern Coke, No. 1 Soft.....	9.25 to 9.75
Southern Coke, No. 2 Soft.....	9.00 to 9.25
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	16.00 to 16.50
Hanging Rock Charcoal, No. 2.....	15.50 to 16.00
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

Metal Market.

Pig Tin.—Prices for Straits Tin have receded somewhat for prompt and current month delivery. Futures are still at a slight discount. Speculation has not been at all lively nor broad in character, yet sufficient to keep matters quite interesting at intervals. Deliveries to the out of town trade and to consumers have reached quite liberal proportions, and by all accounts the greater part of the 1900 tons that have arrived this month has been distributed. A good supply remains in first hands, but the holdings are scattered and there is consequently no pressure except in speculative circles. Retail prices for small lots of Straits from stock rule at about 15¢ @ 15½¢ per lb.

Copper.—The market generally remains quiet, but more on the influence of restricted offering than on business or demand. In any event no important dealings have taken place and inquiries have been only moderate, but no considerable amount of Copper is offered for delivery during the next 30 days, nor does there appear to be any pressure to sell further ahead. No change has been made in quotations for small parcels at retail, which remain on a basis of 10½¢ for Lake Ingot.

Sheet Copper.—Inquiry is fairly active, and the volume of small orders shows some improvement. Contracts for Cornice Copper on a large scale have not made much of a showing, however, during the week, although a good deal of this class of business is said to be in course of negotiation in this section. Prices are unchanged, small lots of Sheet Copper from store being quoted at the net list rate of 14¢ per lb.

Pig Lead.—A very fair business has been done in this market, and it is understood that considerable purchases have been made direct by large Western consumers. In some respects the position of the market is strong, but the buying interest seems still to dictate or regulate values to a great extent. Orders placed with jobbing houses in this district do not represent much beyond an ordinary routine demand. Prices for small lots of American Pig rule at 3½¢ @ 3¾¢ per lb.

Lead Pipe and Sheet.—While there is somewhat more life in the demand

for manufactured Lead, the aggregate volume of business still lags materially behind the average for this season of the year. Inquiry from the plumbers' supply trade is fairly brisk, but individual purchases are still comparatively small in their proportions. Prices in this section are maintained on the list basis of 5½¢ for Pipe and 6½¢ for sheet, subject to a discount of 60 %.

Spelter.—Little has been done here aside from ordinary dealings in carload lots. The demand, also, has continued to be of a routine type. Sellers are not forcing stock upon the market and values remain quite steady, small parcels of good Western brands from store ruling at 3½¢ @ 4¢ ½ lb.

Sheet Zinc.—Consumers are buying in a moderate way only, but jobbers' prices for small lots are rather stiffer, 4½¢ ½ lb being quoted for 600 lb casks and 5½¢ for smaller quantities.

Antimony.—Dealings have been only fair. In small lots Hallett's is quoted at about 8¢ and Cookson's at 9½¢ @ 9½¢ ½ lb.

Tin Plate.—Dealers report that wholesale spot business has not improved in any way during the past week, and dealings in futures have only been moderate, the demand all around being still uncommonly tame. On the other hand, the jobbers note that retail business of a small character has increased perceptibly, although the volume of orders still keeps disappointingly below the average for the season. The arrival of milder spring weather has somewhat stimulated the demand for Roofing Plates during the last few days, and this branch of the retail trade is likely to show marked improvement within the coming month. So far the season, as regards Tin Plates, seems to have run about a month behind in comparison with former years, but it is not unlikely that later orders may, to a considerable extent, make up for past deficiencies, as stocks in consumers' hands are far from liberal. Imports of foreign Plates have been rather free recently, yet stocks do not show any very considerable increase, and the assortment is still somewhat poor. American manufacturers are reported to be offering larger lines of Plates, both Brights and Ternes, at prices very slightly, if at all, above those quoted for the better grades of imported material. The prices quoted for both foreign and domestic Plates show very little change, but they are, if anything, rather weaker than those of a week ago.

A special London cable dispatch of April 24 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate market has been languid. Prices are nominally unchanged, but stocks are being cleared up by some makers at very low rates. Ordinary Cokes were sold at 9/ in several cases, but where brands are specified makers demand an advance. Makers are using strenuous efforts to reduce cost, but workmen are determined to resist material reduction in wages and adhere to Board of Control limit of production. There are now 290 mills in operation, but few are fully employed. Quotations, l.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20 9/ @ 9/3
Siemens Cokes, IC 14 x 20 9/4 @ 9/6
Ternes, 20 x 24 18/ @ 22 6
Charcoals, IC 14 x 20 11/ @ 13/6

Sheet Iron.—Manufacturers' agents report a continued excellent demand for both Black and Galvanized Sheets. A number of mills are sold up on both

kinds of material as far as they can go; that is, for the next 60 days. At the meeting of Sheet manufacturers at Pittsburgh last week it was agreed not to sell during the next thirty days for delivery beyond July 1. Prices are firmer in both Black and Galvanized Iron, and there is renewed talk of an advance to be made shortly in the last named material. Small lots of No. 27 Common Iron in this section are quoted at 2.70¢ @ 2.75¢ ½ lb. Galvanized, under the same conditions, rules at 75 and 5 % to 75 and 10 % off, according to size of order and condition of delivery.

Chicago Report.

Scrap.—Old material is in much better demand, while the supply appears to be quite light. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	....
Machinery Cast.....	5.50	....
Castable Cast.....	5.00	....
Steel Plate (free of burr).....	4.00	....
Burnt Iron and Grate Bars.....	3.00	....
Sheet Iron and Hoops.....	2.00	....
Flue Steel and Breaking Stock.....	4.00	....
No. 2, such as Shovels, Hoes, &c.....	3.00	....
Old Boilers—whole (iron).....	3.00	....
(Iron)—cut in single Sheets and Rings.....	5.00	....
Old Gas-Pipe and Boiler Tubes.....	5.00	....
Cast Borings.....	3.00	....
Turnings.....	4.00	....
Horseshoes.....	7.50	....
Copper Bottoms.....	6 ½	....
Copper Clips and Heavy.....	7 ½	....
Heavy Brass.....	6 ½	....
Light Brass.....	3 ½	....
Pipe Lead.....	2 ½	....
Zinc.....	2 ½	....
Rubbers.....	4 ½	....

Anthracite.—The volume of business is small. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.00 @ 4.75
Milwaukee, Wis.....	4.00 @ 4.75
Kansas City, Mo.....	7.80 @ 7.95
Council Bluffs, Iowa.....	7.80 @ 7.95
Lincoln, Neb.....	7.95 @ 8.10
Sioux City, Iowa.....	7.80 @ 7.95
Aberdeen, S. Dak.....	7.85 @ 8.00
St. Louis, Iowa.....	5.90 @ 6.05
Madison, Wyo.....	6.10 @ 6.25
St. Paul, Minn.....	7.10 @ 7.25
Burlington, Iowa.....	6.10 @ 6.25
Des Moines, Iowa.....	7.60 @ 7.75
Davenport, Iowa.....	5.90 @ 6.05
St. Joseph, Mo.....	7.80 @ 7.95
Leavenworth, Kan.....	7.80 @ 7.95
Omaha, Neb.....	7.80 @ 7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

THE OLD DOMINION OIL CAN COMPANY of Richmond, Va., have been incorporated, with Branch R. Allen as president; John Adams, vice-president; W. B. Saunders, secretary and treasurer, and R. W. Spillman, general manager. They will manufacture the New Departure Oil Can. The capital stock is \$10,000.

THE REYNOLDS WIRE COMPANY are now manufacturing Wire Cloth in their new factory at Dixon, Ill. The company's factory is 85 x 135 feet and four stories in height. It is operated by water power, the company owning one-seventh of the power produced by the Rock River. Large orders for Screen Wire Cloth have been received.

CONDITION OF THE

Hardware Trade.

A SLIGHT ADVANCE in the prices of some goods is one of the features of the market for the present week, and although the advances are not in themselves very important they are gratifying as perhaps indications of a reaction from the low and declining prices which have so long prevailed, and with the improvement in some respects in the general business situation and higher wages recently announced in some industries, are, it is hoped, significant of a better business condition. There is apparently a gradual increase in the volume of trade and the jobbing houses generally report a good and fairly satisfactory business. At the same time both they and their customers are still pursuing a policy of careful buying and are refusing to place orders for more goods than will be surely required in due course by their trade. There is, however, a disposition to purchase a little more freely and fractions of dozens are not called for quite so frequently. There is still some unevenness in the demand, one day having many and satisfactory orders, while the next is perhaps somewhat disappointing. Certain sections of the country are also in better condition than others, and not all lines of goods are equally in improved demand. This of course is to be expected, and such symptoms are normal in the process of recovery from the depression which has characterized trade.

Advice from Chicago.—The Shelf Hardware jobbers report no falling off in the volume of business, while the size of orders has increased materially over that of a month since. Salesmen are writing in very encouragingly of the outlook over all sections of the West. The demand for seasonable goods has grown rapidly of late. Manufacturers who were unable last winter to make the usual large advance sales for future shipment find themselves now called upon to fill orders in every direction. Stocks are so light that it is probable that before the season is over a considerable shortage will be felt in cases of this character. When everybody waits until he needs the goods, and then wants them quickly, somebody must certainly be left. Among the advances which have been made the past few days are 10 per cent. on Wood Planes, 10 per cent. on Agricultural Wrenches, and 20 per cent. on Leather Belting. Many other manufacturers are talking about advances and are instructing agents to hold prices firmly and make no concessions. Jobbers look upon these advances with much favor, as they will themselves be able to make a better profit. The low prices on staple goods continue, but they have not seemed to affect the general trade recently. The demand for Tin Plate is excellent and is expected to increase with the growth of business in the building trades.

Notes on Prices.

Wire Nails.—Without any important change in quotations the market is evidently in a somewhat better condition than a week ago. Some of the mills are withdrawing their extreme prices, and it is difficult to place orders at the lowest figures which have been ruling. The market is accordingly more regular than it has been, and is more accurately repre-

sented by the current quotations. Some of the manufacturers refer to the market as decidedly improved in its tone and are unwilling to accept orders for future delivery at the lowest quotations now ruling. The volume of business has been and continues large and some heavy orders have been placed. There is also a good deal of inquiry for relatively small lots. Quotations from store in New York are unchanged at \$1.10 to \$1.15.

Advices from Chicago.—The demand has been decidedly stimulated by the very low prices now ruling. Good sales have been made to jobbers at various Western points, one of these amounting to 10,000 kegs. All the manufacturers, however, are not willing to sell at the rates now ruling, and some are reported to have withdrawn quotations, while one very large concern has actually advanced its price 5 cents. The situation has not materially improved as to prices. Jobbers are doing a large trade at 90 cents, f.o.b. Joliet, for carload lots or less than carloads, but small lots out of store are firmly held at \$1.

Cut Nails.—There is little new in the Cut Nail market, but with the advance of the season there is an improved demand, and while trade is not specially heavy the mills refer to it as giving little cause for complaint. The fact that prices recently established are quite regularly maintained is a matter for congratulation, and it is anticipated that the demand will continue steady, with perhaps an increasing volume for the next month or two. Quotations for small lots on dock or from store in New York are 90 cents.

We are advised by the Laughlin Nail Company of Wheeling, W. Va., that the impression that they have abandoned the manufacture of Bessemer Steel Cut Nails is without foundation. They are ready to furnish their well known brand and have no intention of giving up this line of manufacture.

Advices from Chicago.—Manufacturers report a fair trade in lots of moderate size. Jobbers quote small lots from stock at \$1.

Barb Wire.—Manufacturers are doing a large business, making heavy shipments and receiving many orders. Notwithstanding this the tone of the market in the matter of price is not entirely satisfactory, and the irregularity referred to in our last review continues, with perhaps a slight tendency toward lower prices. The jobbers continue to sell at close prices and are meeting those made by the manufacturers, and in some cases underselling them. The market is fairly represented by the quotation of \$1.80 for carload lots of Four Point Galvanized, at mill, a figure which is sometimes shaded, while on relatively small orders some of the mills are disposed to ask a slightly higher figure.

Advices from Chicago.—Manufacturers are now in receipt of a large number of orders. The volume of business is daily much beyond the capacity of the mills, and if it continues at the present rate they will soon fall far behind on deliveries. Jobbers are having a large trade and are quoting small lots from stock at \$1.60 and \$1.95, respectively.

Bright Wire Goods.—The trade are familiar with the fact that for some time the Bright Wire Goods market has been demoralized and extremely low prices have prevailed. In order to correct this condition of things the manu-

facturers have recently been conferring, and, recognizing the necessity for an advance, announce higher prices. Withdrawing former quotations the goods are now quoted regularly at a discount of 90 and 10 per cent. All the manufacturers in this line of any prominence unite in announcing the new prices, and the market is regarded as in a much more satisfactory condition than for a long time. The fact that at former quotations the goods were selling below cost is referred to by the manufacturers as tending to secure the maintenance of the advanced prices.

Standard Fiber Ware.—The Standard Fiber Ware Company, Mankato, Minn., announce the following reduced prices on their line of Standard Fiber Ware:

	—Per dozen—		
	No. 1.	No. 5.	No. 5x
Water Pails, 12-quart.	\$3.00	\$3.50	\$4.00
Dairy Pails, 14 quart, \$3.30	....	....	....
Fire Pails, No. 1, \$3.50	....	....	....
No. 2, 14 quart, \$4.00	....	....	....
Sugar Pails, with cover, 4.50	5.00	....	....
Bugby Pails, short and light	2.75	....	....
Prison Jars, with cover, 6.50	....	....	....
Slop Jars, bal. trap, Nos. 5 and 5x	7.00	8.00	9.00
Chamber Pails, Slop Pails, Commode Pails, Nos. 5 and 5x, 14-quart.	6.50	6.50	7.50
Commode Rings, extra	1.50	1.75	2.00
Wash Basins, 10 1/2-inch	1.75	1.90	2.30
" " 13 1/2 "	1.90	2.20	2.80
Wash Howls	3.50	4.00	4.50
Pitchers	5.00	5.50	....
Milk Pails, Old Gold, No. 5	2.00	2.50	....
Fruit Bowls	1.80	2.10	....
Keelers, 11 1/2-inch	2.50	3.00	....
Waste Paper Baskets, 16-inch high	4.00	4.50	....
Mats, 8 1/2-inch, for table use	1.00	1.50	1.40
Mats, 15-inch, for cuspidors, &c.	3.00	3.25	3.75
Mats, 17-inch, for slop jars, spittoons, &c.	3.50	3.80	4.30
Mats, 20-inch, for slop jars, spittoons, &c.	4.00	4.40	4.90
Cuspidors, 8 1/2 x 7 1/2 inch high	7.00	8.00	....
Spittoons, Daisy, 8-inch, pressed	3.50	4.00	4.50
Spittoons, 10 and 11 1/2 inch	4.50	5.00	5.50
Peck Measures	3.00	....	....
Half-Peck Measures	2.50	....	....

The company refer to improvements they have recently made in their goods which render them very much superior to their former products both in durability and finish.

Grindstone Hanger.—O. H. Hanson, Litchfield, Minn., is putting on the market the Giant Grindstone Hanger, which, it is stated, will hang a stone true and fast to its shaft by means of set screws, no blocking, wedging or cementing being necessary. The Hanger is sold to the trade at \$8 per dozen.

Old Metals.—The demand is better, especially for Scrap Iron, but while prices are firmer they are not yet quotably higher. The tendency, however, seems to be toward higher figures in the near future. Dealers' purchasing prices for moderate sized lots, New York delivery, are approximately as follows:

Heavy Copper	.....	\$b 7 c
Light and Tinned Copper	.....	\$b 6 1/2 c
Heavy Brass	.....	\$b 4 1/2 c
Light Brass	.....	\$b 3 1/2 c
Lead	.....	\$b 2 1/2 c
Tea Lead	.....	\$b 2 1/2 c
Zinc	.....	\$b 10 c
No. 1 Pewter	.....	\$b 5 1/2 c
No. 2 Pewter	.....	\$b 5 1/2 c
Wrought Scrap Iron, gross ton	.....	\$7.50 @ \$8.00
Heavy Cast Scrap..... gross ton	.....	7.50 @ 8.50
Stove Plate Scrap..... gross ton	.....	5.00
Burnt Iron..... gross ton	.....	3.00

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, \$b.....	3 @ 3 1/2 c
Rubber Shoes, carloads, delivered at factory, \$b.....	4 1/2 @ 4 1/2 c
Rubber Shoes, less than carloads, \$b.....	@ 4 c
White Wringer Rolls, \$b.....	@ 3 1/2 c
White Syringes, \$b.....	@ 3 1/2 c

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Metal and Miscellaneous Prices.

CHICAGO, APRIL 25, 1895.

Tin—

Strips pils 155@160

Imported Tin Plates—

Charcoal Plates.—Bright.
Guaranteed Plates command special prices, according to quality.

	Per box
IO, 10 x 14.....	\$6.50
IO, 12 x 12.....	\$6.50
IO, 14 x 20.....	\$6.50
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$21.00
IX, 12 x 12.....	\$7.25
IX, 14 x 20.....	\$7.25
IX, 14 x 20.....	\$7.25

Oalland

	Per box
Grade.....	\$10.75
IX, 14 x 20.....	\$12.50
IX, 14 x 20.....	\$14.50
IX, 20 x 28.....	\$14.00
IX, 28 x 36.....	\$21.00
IX, 14 x 20.....	\$25.00
IX, 14 x 20.....	\$25.00
IX, 14 x 20.....	\$25.00

Alloway Grade.

	Per box
IX, 14 x 20.....	\$10.75
IX, 14 x 20.....	\$12.50
IX, 14 x 20.....	\$14.50
IX, 20 x 28.....	\$14.00
IX, 28 x 36.....	\$21.00
IX, 14 x 20.....	\$25.00
IX, 14 x 20.....	\$25.00
IX, 14 x 20.....	\$25.00

Coke Plates.—Bright.

	Per box
Steel Coke—IO, 10x14, 14x20.....	\$6.50
IO, 14x20, 100's.....	\$6.50
IO, 14x20, 60's.....	\$6.50
IO, 14x20, 30's.....	\$6.50
IO, 14x20, 15's.....	\$6.50
IO, 14x20, 7.5's.....	\$6.50
IO, 14x20, 3.75's.....	\$6.50
IO, 14x20, 1.875's.....	\$6.50
IO, 14x20, .9375's.....	\$6.50

Charcoal Plates.—Terne

Guaranteed Plates command special prices, according to quality.
Mansel and Dean

	Per box
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00

Wheat Brand and equal.

	Per box
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00
IO, 14 x 20.....	\$11.00
IO, 20 x 28.....	\$11.00
IO, 28 x 36.....	\$11.00

Tin Boiler Plates.

	Per box of 100 sheets.	112 sheets.
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75

American Tin Plates.

Charcoal Plates.—Bright.

	Per box of 100 sheets.	112 sheets.
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
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IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75
IX, 14 x 28.....	\$11.75	\$11.75

Minerva

	Per box of 100 sheets.	112 sheets.
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
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IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
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IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75

Florence.

	Per box of 100 sheets.	112 sheets.
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
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IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
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IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75
IX, 10 x 14, 12 x 12, 14 x 20, 6.25's.....	\$11.75	\$11.75

Aluminum—

No. 1 Aluminum (guaranteed over 98% pure), in rolling ingots

	Per lb.
Small lots.....	\$1.00
100 lb. lots.....	\$1.00
Ton lots.....	\$1.00

No. 2 Aluminum (guaranteed over 95% pure), in ingots for remelting.

	Per lb.
Small lots.....	\$1.00
100 lb. lots.....	\$1.00
Ton lots.....	\$1.00

No. 3 Aluminum (guaranteed over 90% pure), in ingots for remelting.

	Per lb.
Small lots.....	\$1.00
100 lb. lots.....	\$1.00
Ton lots.....	\$1.00

Antimony—

Doakon..... \$1.00 @ 100 lbs.
Hall's..... \$1.00 @ 100 lbs.

Brass—

Planished..... \$1.00 @ 100 lbs.
Roll and Sheet..... \$1.00 @ 100 lbs.

Brass and Copper Tubes

Brazed Brass Tubing—
Brown & Sharpe's Gauge the Standard.

List April 9, 1894.

	Per lb.
Plain Round Tube.....	\$1.00
4 in. up to 2 in.....	\$1.00
4 in. up to 4 in.....	\$1.00
4 in. up to 6 in.....	\$1.00
4 in. up to 8 in.....	\$1.00
4 in. up to 10 in.....	\$1.00
4 in. up to 12 in.....	\$1.00
4 in. up to 14 in.....	\$1.00
4 in. up to 16 in.....	\$1.00
4 in. up to 18 in.....	\$1.00
4 in. up to 20 in.....	\$1.00
4 in. up to 22 in.....	\$1.00
4 in. up to 24 in.....	\$1.00
4 in. up to 26 in.....	\$1.00
4 in. up to 28 in.....	\$1.00
4 in. up to 30 in.....	\$1.00
4 in. up to 32 in.....	\$1.00
4 in. up to 34 in.....	\$1.00
4 in. up to 36 in.....	\$1.00
4 in. up to 38 in.....	\$1.00
4 in. up to 40 in.....	\$1.00
4 in. up to 42 in.....	\$1.00
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4 in. up to 78 in.....	\$1.00
4 in. up to 80 in.....	\$1.00
4 in. up to 82 in.....	\$1.00
4 in. up to 84 in.....	\$1.00
4 in. up to 86 in.....	\$1.00
4 in. up to 88 in.....	\$1.00
4 in. up to 90 in.....	\$1.00
4 in. up to 92 in.....	\$1.00
4 in. up to 94 in.....	\$1.00
4 in. up to 96 in.....	\$1.00
4 in. up to 98 in.....	\$1.00
4 in. up to 100 in.....	\$1.00

Copper and Bronze Tubing—

84 lb more than brass.

Palma.

IO, 10 x 14, 12 x 12, 14 x 20, 5.75's.....

IO, 10 x 14, 12 x 12, 14 x 20, 7.25's.....

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THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, May 4, 1895.

DAVID WILLIAMS, - PUBLISHER.

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City Farming.

It was a happy idea which moved Mayor Pingree of Detroit last year to inaugurate the experiment of potato raising in that city, with the object of affording a measure of relief to the unemployed and worthy poor. Through his exertions a quantity of vacant and unimproved land within the city was loaned by the owners and prepared for cultivation. A committee was appointed, who were overwhelmed with applications for allotments, but were only able to accommodate 945 families. To each of these a plot of one-third to half an acre, according to the character of the ground, was awarded. Seed was provided and a superintendent was appointed to teach the city farmers to grow potatoes. Unfortunately the work of cultivation was begun rather late in the year and was followed by a severe drought, which caused considerable loss of the yield. Nevertheless the product of the plots, over and above that which was eaten as they went along, gave the cultivators some \$14,000; and the ground carried the whole 945 families through the summer and winter, so that they were not obliged to apply for poor relief. This result was rightly regarded as enough of a success for its adoption elsewhere, and we are glad to note that the plan is to be extensively copied in other large centers of population this year. The use of several hundred acres of vacant land within easy reach of New York and Brooklyn, as well as a number of spare lots in the last named city, have been secured by associations formed for the purpose. These are now being apportioned out to worthy poor people, who will undertake to work them, in plots of one-third of an acre. Some extensive figuring has been done in regard to the capabilities of the land, and it has been calculated that, with proper fertilization, each one-third of an acre ought to produce in the season not less

than 50 bushels of potatoes, 50 bushels of turnips and 500 head of cabbage. Moreover, as only about 12 whole days' work will be required, on an average, to produce this crop, the cultivators will have plenty of time to engage in other occupations as well for the support of their families. The scheme would be an excellent one in the eyes of humanitarians if its only effect was to take some of the tenement house dwellers for a while out of their squalid surroundings during the warm days and give them occupation in the fresh air. But it also provides pleasant and profitable employment by which the needy can earn at least a partial livelihood.

American Industrial Union.

Some details have lately appeared in the public press regarding a new departure in the field of labor organization which has been initiated in the West, and which in its principles and objects appears to embrace some commendable features. It is an organization which has just been started in Chicago under the style of the American Industrial Union, the general plan of which is somewhat on the lines of the American Railway Union. Its aims are briefly as follows: The establishment of employment bureaus, general co-operation and the introduction of a uniform eight-hour working day on September 1, 1897. In addition, it seeks to secure the adoption of the principle of arbitration in all differences between employers and employed and the entire elimination of strikes. The co-operative feature appears to be the point most strongly insisted on by the constitution. To this end the association proposes to ask for the establishment of postal savings banks for the benefit of wage earners; the accumulated funds of which should be used to establish industries which will absorb the unemployed and provide them at least sufficient work to enable them to be self-supporting. Instead of setting aside large sums of money for strike funds and the maintenance of highly salaried officers the available funds of the association are to be used for the furtherance of the co-operative idea, particularly in the direction of establishing and aiding co-operative colonies, of which a considerable number are already in existence. The organization is to be all-embracing, for every trade and profession, no discrimination of nationality, color, sex or religion being allowed. This bare outline of the objects of the new organization is sufficient to show that its aims are higher and less self-seeking than those of the average trade union.

Integrity.

The salary value of a man is measured by two virtues or characteristics—his ability and his integrity. While ability may be as varied in its extent and accomplishments as is the work which it seeks to achieve, integrity stands always the same, a virtue that may be possessed by any man, be he rich or poor, educated or without the simplest rudiments that go to make up what we call an education. And yet what do we mean by integrity? The word certainly appeals to us as being more comprehensive than mere honesty. It is at least interesting to note its derivation, which we find to be from the Latin word *integer*, meaning whole, and the signification still holds, for certainly the man of integrity is one who is whole in honesty. That is, his very being is honest; he is upright because it is—as he has made it—his nature to be upright. We can never think of a man possessing integrity merely for what he can get out of it, as we may consider one who is honest merely because it is the best policy and whom we may believe would be dishonest if it served his purpose better. One feels, however, that when integrity is attributed to a man that his interests are made those of his employer, because he is trying his level best to do as he would be done by and his intentions are honest as well as his deeds. Such a man, who can always be trusted, is the last one that an employer wishes to part with, for this virtue may even cover some failings in ability.

Untrustworthiness.

There is, however, a curious phase of what is sometimes called integrity that cannot justly bear the name. It is that wherein a man, sincerely honest in his motives, unintentionally tells untruths. He may be questioned as to whether his work is complete or whether things can be done so and so, and his answer, made without sufficient thought, may prove upon investigation to be incorrect. A continuance of this practice soon results in his being considered untrustworthy. One is never sure that a job left to such a man will be completed according to instructions. Not that the man intends to shirk or deceive, but that he is heedless, although intentionally honest. Appropriating anything that was not his own or losing in his employer's time might be the last thing he would think of doing, and yet he cannot be considered a man of integrity, for in other things his word is not to be taken implicitly. Such a failing is almost worse than mere lack of ability. At all events it prevents a man from ever occupying a position of responsibility, and is a retarding influence which should be overcome at all hazards. For it is not beyond the power of any man to break up such a habit—for such it is in fact—and cause himself to be trusted and honored by his employer.

THE LETTER BOX.

Battery for Electric Door Opener.

From D. C., Port Jefferson, N. Y.—I have an electric door opener which operated satisfactorily on three or four cell Leclanche or dry battery, but will not work on the crow foot or curved battery unless I use from 40 to 50 cells, and even then they must be in good condition. Will magnets of greater or less resistance give better service? The door opener is of the Sell & Starke make.

Answer.—The crow foot battery belongs to that class of batteries possessing great internal resistance, hence giving a weak current, but able to do this continuously for a long time. They are not adapted to the work for which our correspondent is using them. Increasing the external resistance would help matters in a measure, but would not make them work satisfactorily, as this type of battery is at its best only when working continuously. Consequently it can never be satisfactory for open circuit work. To obtain the best results the internal resistance of the battery should be no greater than the resistance of the circuit. We would advise our correspondent to use only batteries of the Leclanche type for his door opener.

Making Fire Pot Coils.

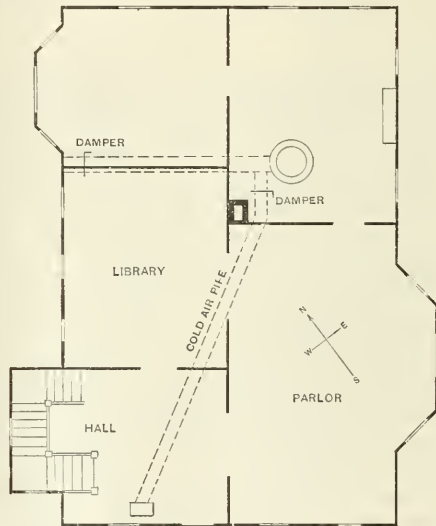
From M. A. Y., Newark, N. J.—To assist "E. G.," who makes an inquiry about how to make a coil for a fire pot in *The Metal Worker*, April 20, I will describe how I would proceed to make a coil. I presume that he has a good strong vise in his shop, and that he can get what assistance he requires to help him bend the pipe, when it is possible that he may be able to bend a 1-inch pipe cold into a 14 inch diameter coil. I would advise him to make wooden jaw pieces for his vise, one piece having a rounded surface and the other a flat surface. These should be made of hard wood. Then by gripping the iron in the vise the pipe can be bent for a short distance at a time until the coil is formed. As 1-inch pipe is rather large, and as considerable muscle is required to bend it, he may find that it is easier to heat the pipe and that a blacksmith's shop is better adapted to the work than his shop. If he goes to a blacksmith's shop he should draw a circle on a heavy piece of sheet iron which has been well chalked. The circle should be of the same diameter as he wants the outside of his coil to be. Then he can try the pipe as he proceeds with the work. He should heat the pipe a little beyond a red heat, and he should be careful to keep the side of the pipe up which has the seam in it, to prevent the seam bursting under the strain of bending. He can make the first bend at a point which will leave enough of the pipe for

cutting a long thread and to pass through the hole which he intends to drill in the fire pot of the stove. As he proceeds with his work he will learn the color at which the pipe bends most readily when heated. He will also find that it must be heated most where he desires to bend. In order to prevent the pipe bending too much in one place he will find an old tin can and a tub of water indispensable. After the proper bend has been given to one part of the pipe, by pouring cold water on this portion he will stop the bending and permit the pipe to be bent at another portion where it is hotter. After he has

carver or stone cutter who takes good care of his health is of good habits and has no lung trouble, and takes special care when working, be apt to live as long as the majority of men who work at other trades?

A Balky Furnace.

From T. D. G., Le Roy, N. Y.—In answer to the query of "J. H. W." in *The Metal Worker* of April 20, in reference to heating a house when west or northwest winds prevail, I would suggest that he change the location of his cold air duct, as shown in the plan



A Balky Furnace.

turned one circle he will find a large monkey wrench of considerable assistance in holding that part of the pipe which has already been bent, while bending the straight part. To make such a coil the assistance of a helper will be almost indispensable, and it is hardly probable that the first coil will be as true as he will desire. As he acquires some practice and experience, however, better workmanship will result. It is more than probable that he can buy a coil of the character he desires from some neighboring city cheaper than he can make one; but if he desires the experience and has the time to spare, the blacksmith's forge, the monkey wrench, the old tin can and the tub of water, he can, with a little assistance, complete the job.

Healthfulness of Stone Cutting.

From R. M. L.—I would like to learn through the columns of *The Metal Worker* whether stone cutting is a healthy occupation. Would a stone

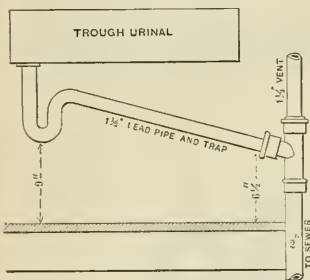
herewith, so that it may run more direct from the northwest wall. By so doing he would not require an elbow. I would also suggest another cold air pipe from the hall, to be used when the wind blew from the west and northwest, when the regular cold air pipe should be closed or partly closed.

From G. H., Salem, Ohio.—I notice in *The Metal Worker* of April 20 that "J. H. W." is having trouble with his furnace. If he will place a 27 x 27 inch cold air register face in the floor of the hall close to the 10 x 15 heating register and run a cold air box of the full dimensions of the register face to the furnace he will relieve his trouble. The cold duct would have a capacity of 480 square inches and will enable cold air to circulate through the rooms. When taking the cold air from the hall the outside cold air duct should be temporarily closed. It will be noticed that the outside cold air duct has a capacity of about 240 square inches, which is entirely inadequate to supply the registers under any circumstances.

Is It Sanitary?

From B. C. H., Haywood, Cal.—I submit a sketch of a piece of work done in this town which is the occasion of some dispute. A claims that the job is not sanitary and that the trap will siphon itself, while B contends that the job is vented and sanitary. Our regulations require fixtures 5 feet or over from a vent stack to be back vented. I should like to have an opinion as to which is correct.

Note.—We trust our plumbing readers will express their views on this subject. If there was no fixture on the soil pipe but the fixture shown there would be little danger of siphonage. If there are other fixtures it is more than likely that the trap would be siphoned by a discharge of water through the main stack. This probability would be practically removed by



Is It Sanitary?

back venting the trap according to the regulations given. It would seem that the trap should be back vented to comply with them.

Will It Pay to Cover Furnace Pipe?

From A. Y. C., New Jersey—As the season has not yet opened for the furnace readers of *The Metal Worker* to be overwhelmed with work, I would like to hear opinions from different parts of the country as to the advisability of covering furnace pipe. We all know that when the tin pipes are left without any non conducting covering a very perceptible heat is noticed on opening the cellar door. The air which thus welcomes us has been heated by contact with the large surface of furnace pipe which is left exposed in the cellar. Some claim that this heat is not wasted, but keeps the floor warm, in accordance with the old proverb for health of keeping the feet warm and the head cool. Now, the question is, Will it pay to cover the pipes? The average furnace is liable to have at least six pipes, and their average length will not be far from 12½ feet, making 75 linear feet of pipe to be covered. The cost of covering this pipe will vary with the quality of the material which is used for the purpose, but in my section when furnace pipes are covered the price is not far from 50 cents per foot. This would make an expense of \$37.50 for covering the furnace pipes. There is no doubt but what some heat will be saved if the pipes are covered, but will enough heat be saved to permit a one-size smaller furnace to be used and a saving effected in the first cost of the furnace toward

paying for the pipe covering? If not, will it enable a furnace to be run easier and effect some saving in fuel, enough to save the interest on the cost of covering the pipe and a little to go into the sinking fund to pay for the original outlay for the pipe covering? If not, I would say that it would not pay to cover furnace pipe. I have covered pipes for some of my customers, but have not covered the pipes on the furnace in my own house. I shall be glad to hear from those who have had some experience in the matter.

Two Pumps on One Pipe.

From J. C., Boston, Mass.—In the answer to "W. K." in *The Metal Worker* of April 20 the remarks on the connection of two pumps on one suction pipe are pertinent and should be sufficient. Perhaps it would be well to observe that it is injudicious, to say the least, for plumbers to countenance or use doubtful devices. They ought not to introduce such work except under protest. I have never seen any automatic contrivance that would overcome the difficulties arising from connecting a second pump on one suction pipe, and more especially when the pumps are not level. It would be well for men repairing or fixing pumps to thoroughly understand all that a suction pipe must perform to secure perfect work with one pump. If they did, they would always see that the inconvenience and trouble of keeping two pumps on one pipe in working order would be greater than the cost of two suction pipes. When they do this they will secure the confidence of their patrons.

Placing Registers.

From YOUNG JAY.—I would like to see described in *The Metal Worker* the method used by its readers for determining the proper location for registers in a church to be heated by a furnace. Also, should the hot and cold air registers be placed side by side, or should the hot air be in the center and the cold air at the door? What is the latest approved plan? Make a diagram.

The Best Way to Calk Joints.

From J. C., Boston, Mass.—Seeing the inquiry of "Junior Plumber" in *The Metal Worker* of April 13, I give a few hints from my experience. The few suggestions I have to offer on making lead joints in soil pipes and other joints which will have to bear the water test are brief. First, never make two attempts at a joint if it can be avoided, and always have a ladle large enough to fill any joint that may have to be made at one pouring. Let the lead be hot enough to run the joint well, but do not let it get red hot. For all kinds of joints have well twisted coils of oakum and calk it properly into the joint, leaving no stray strands to make faults in the lead. Leave no less depth in the hub than 1½ inches for the lead. For a horizontal joint have an asbestos rope, or use putty or clay to keep the lead in the joint. When calking the horizontal joint do not cut off the pouring fin, but let the calking iron pass into and through it so as to fill any opening that may be caused by the shrinkage of the lead in cooling. When this is done the remainder may be cut off and the joints will be sound. In calking upright joints always begin tamping

furthest from the pouring place in order to fill any opening that may be there, and you may be reasonably sure to have joints that will stand the water test.

Joints in Greenhouse Piping.

From W. F. C., St. Louis, Mo.—In *The Metal Worker* of April 20 I notice the communication on making joints in cast iron pipe from "T. C." of Baton, and as I am convinced that all good things do not emanate from the Hub I venture to give my personal experience, even if it be from the Western wilds. "T. C." seems to advocate the use of iron borings and sal ammoniac. There is no question as to the firmness of this material, even after only a few hours' drying; but I find that the action of the sal ammoniac upon the pipe is very detrimental, as it continues the process of oxidizing for a sufficient length of time to gradually weaken the adjacent parts of the pipe. If "T. C." will try my mixture I think he will agree with me that time will be saved, as the consistency of the material, which resembles paste, enables it to be much more rapidly handled and the iron will be better preserved. He will find that it will require very little tamping, and in two or three days will become as solid as the sal ammoniac joint. Take rye flour and mix with the iron borings. Then add a little common vinegar and the paste is made.

Heating Country Schoolhouse.

In a recent issue of *Modern Progress* J. E. Patterson, writing on the subject of "Sanitary Heating and Ventilation," describes as follows a method of heating a country schoolhouse:

I am of the conviction that every country schoolhouse, no matter of what the superstructure may consist, should rest upon full foundation walls above a thoroughly drained cellar, and the chimney should extend down into this cellar, being provided with either a thoroughly protected fire place at the base or suitable opening for stove pipe. About on a level with the schoolroom floor, and opening into the chimney, a ventilating register should be placed. The heating stove may now be placed in any suitable or convenient place in the schoolroom and the pipe run to the chimney in the ordinary manner. Entering the floor, immediately below the stove, should be an opening connecting by suitable pipe with the outer air. Ignite now and keep alive, in either fire place or stove in the basement, a light, slow burning fire. This will induce chimney draft, tending to produce a vacuum in the chimney, and the cold air from the schoolroom will be drawn into the chimney through the ventilating register, the rapidity of its passage being increased when fire shall have been started and maintained in the schoolroom stove. The result of this will be a constantly changing atmosphere in the schoolroom, a circulation which will cause the intermixture of cold and heated air, producing an equable temperature.

In the article on the Trade School of the Springfield Industrial Institute, on page 51 of *The Metal Worker* of last week, it was stated in error that the day plumbing class would begin operations on December 2, 1894, and continue until April 1, 1895. The dates, of course, should have been 1895 and 1896, respectively.

TIN PLATES.

Women in Rolling Mills.

We have received the following letter from P. H. Laufman of Pittsburgh, Pa.:

Let me call your attention to the following article, clipped from a Pittsburgh paper, which the writer has been informed is correct in its details: "The employment of women as operatives in tin plate mills in America has proved a success in the large new plant of the Monongahela Tin Plate Company at South Fifteenth street. Two weeks ago Mrs. Hattie Williams of South Fourteenth street came to the manager of the Monongahela mill and asked for work because her husband was ill and could not support the family. Mrs. Williams was put to work separating plates as they came from the rolls, and so proficient was she that five young girls were given her as assistants and she was made forewoman of that department. It is said that the company now propose to put 100 girls and women at work in the mill within the next few weeks in several departments now run by men. Mrs. Williams said that she had worked in the tin plate mills of Wales for ten years before coming to this country. In the Swansea mills women form a great part of the operating force. A manager of the South Side mill said that women had proved very effective for the work. Mrs. Williams is being paid \$1.65 per day, while her husband, a laborer, is earning \$1 a day. To earn \$1.50 a day the women in the separating department must handle 6 tons of iron daily."

Among the things that are cursing our country at the present day is the adoption of foreign fashions and the customs of old, effete countries beyond the seas. It is seen in all grades of society and all branches of business. I will only allude to one, which is a disgrace to our republican idea, and particularly to the high esteem in which we hold woman. We in this country claim to have reached a higher plane of civilization in the elevation and culture of women. The point in this: The employment of women in our rolling mills, where the black sheets are made for tinning; women as openers of the packs after being sheared to size, with leather aprons and hand leathers on, working side by side with men and boys who are rollers, doublers, matchers and shearers, and who are generally of coarse feeling and vulgar in conversation. Shame! Shame!! And yet this is being done by some of our tin plate mills. There is one department of the manufacture of tin plates in which women might be employed, and yet I do not approve of that. In the finishing department of bright plate, women and girls could be employed and be kept separate from the men. I trust that our manufacturers will not contribute to bring our women down to the level of the poor oppressed women of Wales.

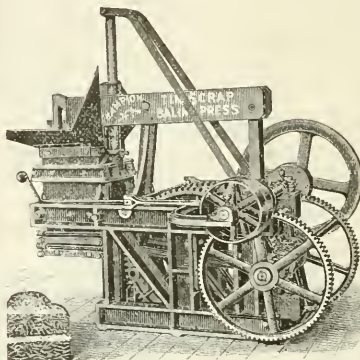
THE MACHINERY for the tin plate plant of the La Belle Iron Works, Wheeling, W. Va., has been received

and is now almost all placed in position. The works will be ready to start up within a short time. The rolling mill equipment includes four hot and four cold mills.

Champion Tin Scrap Baling Press.

The accompanying cut illustrates a baling press for tin scrap, now being manufactured by the Famous Mfg. Company, Randolph and Canal streets, Chicago, and which is recommended for use in stamping works and tinware factories. The machine is an adaptation of a hay baling press made by the concern. It is claimed to require but little power to run and only one person to operate it. The saving of time, labor and space that would be secured

even the union will have in the end to succumb to the inevitable and agree to a substantial cut in the wage scale, that appearing to be the only way out of the present difficulties under which the Welsh tin plate manufacturers are laboring. It has come to be a question between the institution of radical economies in manufacture or the entire closing down of their works. The only possible way in which production can be cheapened without lowering the standard of the product is by securing adequate reductions in the cost of labor. As it is the Welsh tin plate workers are being paid at a higher rate than almost any other workmen of their class in England. The tin plate wage scale was last fixed about 20 years ago, when the prices of plates were very considerably higher than they are at the present time.



Champion Tin Scrap Baling Press.

by the use of a machine of this kind in large tin working establishments, where scrap tin accumulates so fast and reaches such unwieldy proportions if left loose, will be appreciated by all who have experienced this inconvenience.

The Welsh Tin Plate Trade.

The situation in the Welsh tin plate trade continues to cause grave anxiety on the other side. Considerably more than one half of the workers are idle, and but very few of the mills still in operation are fully employed. The officials of the Tin Platers' Union continue to struggle against any further reduction in the wage scale. An important meeting of the men was to have been held at Swansea last week, when steps were, if possible, to be taken to bring about a uniform action among the work men employed at the various mills. At present the larger number of men who are employed are working at the reduction of 12½ per cent. in the wage scale, made at the opening of the year, and in several cases the men have agreed to a still greater reduction in preference to being thrown out of employment altogether. This action has, however, given great offense to the members of their union. Nevertheless, it is believed that

it therefore seems reasonable that the men should agree to bear their share of the present burden in this way. The English trade papers of every shade of opinion are strongly urging this upon the men as the most sensible course to pursue if they wish to keep their employment and enable their employers to hold any portion of the trade which is now drifting away from them. The manufacturers appear to have resigned themselves to the conviction that the American trade has substantially slipped out of their fingers and can never be regained in its entirety. They have, however, other fields to cultivate, and already they have succeeded to some extent in stimulating their trade with the Continent of Europe, as well as with Australia, South Africa and other portions of the British Empire, and they are now looking forward to a large demand from the Orient, following on the completion of peace between China and Japan.

FITZ, DANA & Co., 110 North street, Boston, Mass., issue convenient blotters backed with an advertising card carrying a calendar for the month of May and an announcement of metals, tin plates, roofing plates and other supplies handled by the firm.

SCRAP.

THE DUQUESNE TIN PLATE WORKS of Pittsburgh, Pa., are now in full operation at their new location on the South Side, adjoining the plant of the Monongahela Tin Plate Company. The black sheets rolled by the last named concern will be tinned in the works of the Duquesne Tin Plate Company, according to a mutual arrangement. The Monongahela Company will not dip at present.

THE TIN PLATE MILLS of the St. Louis Stamping Company, St. Louis, Mo., are running to full capacity with an average daily output of 800 boxes.

THE STICKNEY IRON COMPANY, Baltimore, Md., have begun the erection of a two-mill tin plate plant at Canton, a suburb of the city.

BRITISH EXPORTS of tin plate during the first quarter of the present year were of the value of \$5,268,744, as compared with \$4,834,777 in the corresponding quarter of 1894.

FURTHER ADDITIONS are to be made to the plant of the Ford & Dnnelly Foundry & Machine Company, Kokomo, Ind., in order to meet the increasing demand for tin plate machinery.

THE CONTRACT has been awarded for erecting the buildings for the Norton Tin Plate and Can Company's new plant, at Baltimore, Md.

THE SOMERTON TIN PLATE WORKS, Third avenue and Third street, Brooklyn, have been running continuously since last summer in order to meet an excellent demand for their bright charcoal and coke plates, which have acquired quite a reputation among consumers in this part of the country. A large part of their product is used at the adjoining tin box factory of Somers Brothers, the owners of the tin plate works. Just at the present moment the proprietors are considering the advisability of making some changes in their works in order to adapt them to the use of coal. Hitherto oil has been used for fuel, but the recent heavy advance in the price of that product has so materially increased the cost of its use that, as things now stand, a return to coal would seem to be the most economical course.

SIR JOHN JONES JENKINS, who is interested in some of the large Welsh tin plate works, speaking recently at a meeting of the Swansea Harbor Trust, declared his conviction that within a very short time the American works will be making nearly all the tin plate used in this country. The Welsh tin plate makers, however, he said, were gradually opening up other markets; and he thought that possibly the termination of the war between China and Japan would be followed by a very large outlet of Welsh tin plates in that direction.

TRADE REPORTS from England indicate that the demand for tin plates from Russia and South Australia is showing a steady increase. It is also anticipated that the settlement of peace between China and Japan will be followed by a considerable demand for tin plates from those countries, and the Welsh manufacturers are said to be making preparations to sedulously cultivate that market.

THE STATEMENT that the Foxhole Tin Plate Works, Llansamlet South Wales, was to be restarted after an idleness of two years, seems somewhat un-

accountable in face of the great depression in the Welsh tin plate trade and the fact that so many strong concerns have been obliged to close down their works. It seems to be a singularly unfavorable time for works that have not been operated for so long a period to be starting in again.

FURTHER DEPARTURES of Welsh tin plate workmen for the United States are reported by the English papers.

THE MACHINERY for the Laughlin Nail Company's new tin plate plant at Martin's Ferry, Ohio, has been shipped by the Totten & Hogg Iron & Steel Foundry Company of Pittsburgh. The same concern have recently shipped two mills to the Baltimore Iron, Steel & Tin Plate Company, Baltimore, Md.

JNO DRAEGE, secretary and treasurer of the Licking Rolling Mill Company, made Louisville the first place of offer to sell their new product of tin andterne plate. He exhibited fine samples ofterne plate and says his mill is now fully equipped for turning out any quantities for the market. This is the first mill south of the Ohio River to make tin plate. They roll their own black sheets.

THERE is some talk of building a tin plate plant at Scranton, Pa.

FOR A BALTIMORE tin plate concern an engine was built, complete, by the Maryland Steel Company of Sparrow's Point, Md., in 11 weeks, the designs, patterns, &c., being all made in that time.

GUMMEY, SPERING & Co., Philadelphia, are putting on the market a new high grade bright plate under the name of G. S. & Co. Tissue Brights. The firm report an excellent demand for their Alderleyterne plates and for their anti-pinhole bright plates.

MCLLVAIN, CRATER & HIGH, proprietors of the Reading Tin Plate Works, Reading, Pa., have completed the erection of their works and commenced making plates. They are conveniently located along the line of the Pennsylvania Railroad and will shortly have a siding run into their works. Their building is 30 x 100 feet, and they have installed therein two Phillips-Newbold stacks and will install another later in the season. They have room for six stacks altogether and their present installation will be added to as occasion requires until their equipment is complete. They have already placed seven brands ofterne plates on the market, as follows: America, an extra heavy redipped plate; Victor, a bright spangle plate with a trifle less coating than the America; Horton, a bright spangle plate, somewhat cheaper than Victor; L. C., a full weight plate, dark palm oil finish, of superior grade; Penn., a full weight plate, dark finish, cheaper than L. C.; C. H., a dark oil finish plate, 210 pounds to the box, and H. M., a plate weighing 204 pounds to the box. In a circular they are sending out to the trade the firm call attention to their different brands and state that all their plates are assorted, and that by the term "full weight" they mean 216 pounds. They also state that they make extra heavy coated ternes in either dark or bright finish and heavy spangled ternes, and that they can make a plate to carry anywhere from 10 to 40 pounds' coating and will make any plate called for according to specification provided.

THE VULCAN IRON COMPANY of New Castle, Pa., have recently closed a contract with the New Castle Steel & Tin

Plate Compny for ten sheet and ten pair furnaces, also 12 annealing furnaces for their new plant at New Castle, which will be the largest plant of its kind in the world when completed.

THE OFFICE of Charles S. Trench & Co., tin plate brokers, has been transferred from 20 Cliff street to 54 Cliff street, New York.

THE ALIQUIPPA TIN PLATE COMPANY of Pittsburgh, Pa., have been reorganized. The plant of the concern, located at Aliquippa, Pa., and which has been idle for a considerable time, is being overhauled and put in thorough repair, and is expected to resume operations about the 15th inst.

UNITED STATES CONSUL HOWELL, at Cardiff, Wales, has recently forwarded a report on the tin plate trade of his district to the State Department. According to this report the value of the total exports of tin plate from Great Britain to the United States during the calendar year 1894 amounted to \$13,348,930, which was \$2,742,997 less than the total for 1893 and \$1,431,992 less than the total for 1892. The consul remarks that the year 1894 was a wretched one on the whole for the Welsh tin plate trade. It also comments on the disappointment felt by the Welsh manufacturers on the absence of ill effect on the American tin plate works from the reduction of duty under the Wilson bill. Speaking of the effect of American competition on the demand for Welsh tin plates, the consul reports that, excepting plates for packing oil, practically the whole American demand is for lighter gauges, down to as low as 85 pounds per box of 112 sheets, 14 x 20, instead of the former standard of 108 pounds. This change, he says, is regarded as likely to be permanent. Probably the most serious feature of the year's trading, he adds, has been the seriously diminishing call forterne plates from the United States, the American works being equal to supplying almost the whole of that important trade. He also reports a marked falling off in all kinds of charcoal tins, but especially in the highly finished kinds.

Edward Foster, who carried on a large business as a tin and sheet metal worker at Ridge avenue and Spencer street, Philadelphia, and who was a well-known member of the sheet metal trade in that section, died suddenly, on April 29, from neuralgia of the heart. Mr. Foster was born in Lancashire, England, in 1842, and came to this country when he was four years old. He was apprenticed to Thomas Wilkinson of Philadelphia in early life, and learned the tinmith and sheet iron working business. In 1866 he began business for himself at the Falls of Schuylkill, and a few years built up a large trade and became an extensive owner of real estate. Mr. Foster was prominent in church and masonic circles. He was a manager of the Manayunk Trust Company of Philadelphia.

The combination of pottery manufacturers known under the name of the Akron-Canton Stone Ware Agency, which has sold more than two-thirds of the stone ware of the United States for the last ten years, has been broken up, owing to dissatisfaction among the 13 companies which formed the pool. The effect of this disruption, it is thought, will be to paralyze prices in the stone ware industry.

PLUMBING and GAS FITTING.

Call for the National Convention.

The following letter is being sent to the Master Plumbers' Associations over the signature of John Mitchell, president, and H. J. Pattison, secretary, of the National Association of Master Plumbers, from the president's headquarters in New York:

The thirteenth annual convention of the National Association of Master Plumbers will convene in the Walnut Street Theater, in the city of Philadelphia, Pa., at 10.30 a. m., Tuesday, June 11, 1895, continuing in session for three days. The Continental Hotel, Ninth and Chestnut streets, has been designated as national headquarters.

From the important events bearing upon our trade which have happened during the year and the very important questions to come before the members of the National Association this convention will undoubtedly be the most important one in our history. In order that the questions may be thoroughly discussed and wisely acted upon by the representative master plumbers, it is hoped that all local associations will send delegations of their best members.

Anticipating that the convention will be a large one, and in order to facilitate business in an orderly manner, tickets will be prepared bearing the delegate's name and signed by the national secretary, which will allow only delegates on the convention floor. Those attending the convention who are not delegates will have seats in another part of the convention hall. These tickets will be prepared, as far as possible, from the credentials returned to this office, so as to be ready for distribution immediately after the report of the Credential Committee. To avoid delay in the preparation and distribution of these tickets, please send to this office the names of your delegates who will attend the convention on the inclosed credential blank at the earliest opportunity.

It may not be out of place to call attention to Article XV of the constitution and Article XVI of the by-laws, which prescribe that all amendments to the constitution and by laws must be in the hands of the secretary, Henry J. Pattison, 258 West Eighteenth street, New York, at least 30 days before the annual meeting.

The following passenger associations have granted a reduction in railroad fare as described in next paragraph: The Trunk Line Association, the Southern States Passenger Association, N. Y. & Boston Lines Passenger Company, Boston Passenger Company and Central Traffic Association. It is expected that the Western Lines Passenger Association will make reductions, but in case it does not delegates west of Chicago, Peoria, Quincy, St. Louis and Cairo will have to buy regular tickets to these points and from there buy through tickets to Philadelphia and get certificate.

In order to secure a reduction in railroad fare carefully observe the following:

The reduction in railroad rates is

based on a fare and a third on the certificate plan. Any person availing himself of this reduction will have to buy a first class ticket from starting point to Philadelphia and secure a certificate from ticket agent from whom ticket is purchased. In buying ticket be sure and state that you are going to attend the master plumbers' convention so that the certificate will be made out to that effect. The certificate is a written statement that you have purchased ticket at regular rate and over a certain route. The certificate is indorsed at the convention by the national secretary and a special agent and is necessary to secure a return ticket at one-third regular rate. Ticket agents at all important stations in the territory of the associations granting rates will furnish certificates; but if your local agent cannot he will tell you the nearest station where one can be secured. In this event purchase ticket to such station and from there buy through ticket to Philadelphia and get certificate. Tickets and certificates can only be secured within three days, Sunday excepted, prior to and during the continuance of the convention, unless you are at a distant point and then provision is made for you. To accommodate all who desire to attend the steam fitters' convention the certificates will hold good for return ticket until the evening of June 18. Certificates and return tickets secured upon certificates are not transferable. The return ticket at one-third fare is for continuous passage over same route taken in going. Delegates should present themselves at the ticket office at least 30 minutes before the departure of trains, to give agent time to fill out certificates. No refund of fare will be made on account of failure to secure certificates and have them properly filled out.

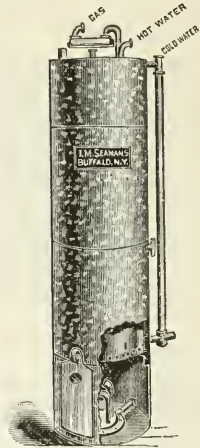
Accommodations can be secured at the following hotels, none of which are more than five squares from the convention hall:

Continental, \$3 to \$4 per day; Girard, \$3 per day; Bingham, \$2.50 per day; Hanover, \$2.50 to \$3.50 per day; Windsor, \$3 per day; Vindig (for gentlemen only), \$2.50 per day; Brunswick, \$2 per day; Colonnade, \$3.50 per day; Lafayette, \$3 to \$5 per day; Bellevue, \$2 per day and upward; Metropole, \$3 per day; Stratford, \$4 to \$6 per day. The above are all on the American plan. The following are on the European plan: Lafayette, \$3 per day for room; Metropole, \$1.50 per day and upward for room; Dooner's, \$1, \$1.50 and \$2 per day for room.

Seamans' Water Heaters.

Two different apparatus for heating water, suitable for use in connection with the city water pressure, have been patented by Irving N. Seamans, 377 Maryland street, Buffalo, N. Y., who is now enlarging his facilities for manufacturing them. In Fig. 1 is shown his automatic heater, in which gas is used for the fuel. This apparatus can be adapted to the kitchen boiler already in use. It consists of a sheet metal jacket, lined with asbestos, which surrounds

the boiler, with a space between the jacket and the boiler. Under the boiler a specially constructed gas burner is set. The flow of gas to the burner is controlled by a thermostat, which is operated by the temperature of the water in the boiler. When water is drawn from the boiler and cold water takes its place the effect on the thermostat is to open the gas valve and start the burner in full operation. A by-pass is arranged in the burner so that a sufficient quantity of gas is supplied to keep a small flame burning continually. It is pointed out that the entire surface of the boiler is subjected to the effect of the burning flame and hot gases arising from it, so that the water is heated very quickly and with an economical consumption of gas. It is stated that the burner will consume as a maximum 40 feet of gas per hour, and that 1 gallon of water can be heated



Seamans' Water Heaters.—Fig. 1.—The Automatic Heater.

from a temperature of 45° to 180° by the combustion of 1 foot of gas.

Fig. 2 shows the instantaneous and automatic water heater, which will supply hot water immediately, or when connected with the boiler will perform the services of a water back. In construction it is a series of hollow copper disks with pins on the under surface, which are connected at the center by means of a brass nipple, so that 6½ feet of surface of high efficiency is exposed, or a total heating surface of 12 square feet. Beneath the heater a gas burner of four, five or six sections is placed, each section consuming as a maximum about 10 feet of gas per hour. The burners and the heater are enclosed in a sheet metal casing covered with a non-conducting magnesia jacket. The thermostat consists of a brass tube containing a composite rod of glass, which, through the inequalities of the expansion and contraction, opens and closes the gas supply valve. The valve is of the lever character of frictionless

construction to secure quick operation. The thermostat is placed in the center of the heater, where the different temperature of the water affects it most promptly; and it is said that it will operate the valve and turn on the gas when but $\frac{1}{2}$ pint of hot water has been drawn. It is stated that its construction is such that heat or cold will not injure its efficiency, and that it may be set to operate and hold the temperature of the water at any degree from lukewarm to the boiling point or even higher. It is claimed that this heater is adapted not only for connection with

Sanitas Pantry Sink.

The accompanying cut shows one of the many new fixtures to appear soon in the new catalogue of the Sanitas Mfg. Company, Boston, Mass. The idea is in accord with the prevailing sentiment in favor of open sanitary fittings, which is and always has been a feature of the fixtures of this company. Among the structural advantages of this pantry or kitchen sink it is pointed out that the trap is placed near the sink and the connection is made with a slip joint, rendering breakage practically impossible. The porcelain is roll rim and of such body that it is impervious to liquids and unaffected by chemical action or absorption. The drip boards at either end are made to any size and afford protection against breakage of ware by the user. The cocks are of extra heavy material, with a construction that, it is said, prevents spattering when the pressure is let on, and are

condemning penitentiary made cast iron and marble fixtures and pledging the members to discontinue their use.

The following officers were elected for the ensuing year:

President, T. B. Davis, Rock Island.

Vice-president, L. P. Hopkins, Springfield.

Secretary, J. P. O'Neill, Jr., Peoria.

Treasurer, John G. Roland, Chicago.

Delegates to Master Plumbers' convention in Philadelphia in June: T. B. Davis, Rock Island; J. M. Simpson and John O'Neill, Jr., Peoria.

The convention adjourned to meet next year at Rockford. A visit to Rock Island Arsenal was made in the afternoon.

In the evening the local association gave the delegates a banquet amid flowers and music.

After cigars had been lighted President T. B. Davis arose and called on Thomas Culliton of Chicago, who presented a watch charm, set with dia-

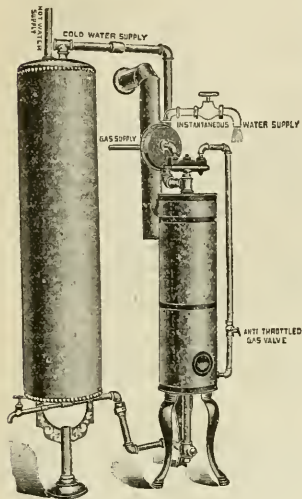
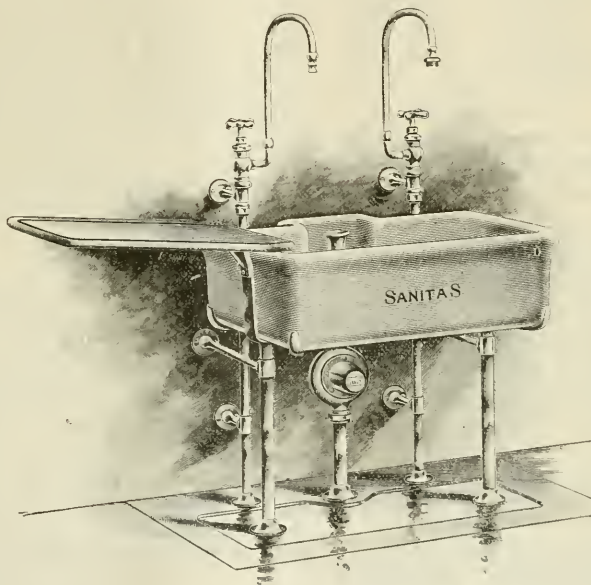


Fig. 2.—The Instantaneous and Automatic Heater.

the kitchen boiler for the storage of a supply of hot water, but it is also adapted for heating water in large tanks, for heating hot water stacks for indirect heating and for radiators and coils for direct heating. The heater is rated to furnish 600 gallons of hot water in ten hours when six burners are in use. When the heater is used for instantaneous work it will furnish a constant supply of hot water in quantity depending upon the temperature—the lower the temperature the greater the quantity. With a gas consumption of 40 feet per hour, and the water supply at a temperature of 48°, it is claimed that the device will heat 3 pints of water per minute to a temperature of 190°, 5 pints to 170°, and 7 pints to 150°. It is pointed out that this feature of the apparatus is adapted to the demand which grows with the use of gas or gasoline for cooking in the kitchen when there is no coal fire and water back to furnish a supply of hot water to the kitchen boiler. It is pointed out that the storage of a large quantity of hot water in a boiler in the kitchen adds appreciably to the temperature of the kitchen and to the discomfort of cooking in the summer.

A NOTICE is being sent out by P. Stanton, Broadway near McComb street, King's Bridge, New York, announcing that the firm of Stanton & Clark has been dissolved by mutual consent and that he will continue to carry on the plumbing, steam and gas fitting, tinning, furnace and range business in the building adjoining that formerly occupied by the firm.



Sanitas Pantry Sink.

supported at the wall with special posts. The legs and frame are so made that they are readily adjusted.

Illinois Plumbers.

The second annual convention of the Illinois Master Plumbers' Association was held at Rock Island last week, President John Simpson of Peoria in the chair. At the first session Mayor Medill cordially welcomed the visitors and President Simpson responded. About 100 members were in attendance. One of the matters under consideration was an amendment to the constitution increasing membership fees. The report of Secretary J. O'Neill of Peoria showed that about 95 per cent. of the master plumbers of the State are members of the association. Mr. Culliton of Chicago, who has been laboring with the Legislature for the passage of a bill for the regulation of the plumbing business in Illinois, made an encouraging report. In the afternoon the delegates visited points of interest. The most important resolution adopted was one

monds, to the retiring president, John M. Simpson. Mr. Boyd of Chicago presented a similar souvenir to John O'Neill, the secretary. Both these gentlemen responded briefly. W. E. Goddman, national treasurer, spoke, as did also the Iowa State president, Henry Ewinger of Burlington; B. M. Murphy, president of the Chicago local association; "Pap" Harris, ex-president of the Iowa State Association, who proposed the union of contiguous States into a district association; Paul Raditzky, Chicago, of the National Executive Committee, who emphasized the importance of legislation in order to secure a better class of work by responsible plumbers. Messrs. Burns and Bream of Chicago, John E. Allen, secretary of the Iowa State Association; J. W. Mills, State President of the Steam Fitters' Association; State President Loudon and a number of others were called upon.

THE SAN ANTONIO SEWER PIPE MFG. COMPANY, San Antonio, Texas, have been chartered, with a capital of

\$100,000. The incorporators are Geo. W. Russ and N. Mackey of San Antonio, L. A. Marshall of Indianapolis, and Aaron French and Carl Rutter of Philadelphia.

Plumbing Graduates of Pratt Institute Trade School.

The result of the examination, held by a committee of the Journeymen Plumbers' Association of Brooklyn, of graduates from the plumbing class of the trade school connected with the Pratt Institute, Brooklyn, on April 10 has just been announced. The following are the names of the successful graduates, who, after completing a 12 months' course of instruction, have been awarded certificates which, in case of the holder afterward applying for admission to the association, will be accepted in place of the examination otherwise required before membership is allowed:

S. M. Cavin,	J. P. Stuart,
J. W. Hurrall,	A. Daisley,
L. J. Noller,	L. W. Lvach,
R. Quanz,	W. W. Hull,
C. Swan,	S. Weinstock,
Jas. Stewart, Jr.	

Convention Gossip.

The National Association of Master Steam Fitters' Convention headquarters will be at the Continental Hotel in Philadelphia.

Visiting delegates to both the Plumbers' and Steam Fitters' conventions desiring accommodation at the headquarters of their respective associations would do well to remember that both conventions will be held in the one week and that the Continental Hotel is to be headquarters for each, and also for the Press Convention, in session at the same time; consequently early application for rooms should be made.

At a meeting of the Philadelphia Master Plumbers' Association recently held it transpired that no official notification of the fact that the convention would this year be held in Philadelphia had been received. The Philadelphia plumbers, however, are not wound up in "red tape" and are spreading themselves on arrangements for the entertainment of the guests to an extent which will assure a good time to all fortunate enough to be able to attend.

Some manufacturers of plumbing and heating goods have already secured parlors at headquarters and will be on hand at the right time to welcome their numerous acquaintances in the trade. Proprietor Kingley has made arrangements to place the writing room at the disposal of guests for exhibition purposes. This, with the privilege of exhibiting light articles in the rooms of guests, is about all the accommodation to be obtained for the exhibition of manufacturers' goods.

PLUMBER INSPECTOR KALBFELL of St. Louis has made his annual report, which is quite satisfactory, and it is probable that the office will be self supporting in future. The receipts were \$12,022 and the expenses of the office for the year have been reduced \$142.

Cast or Vitrified Pipe.

The plumbing ordinance of New Haven, Conn., is a bone of contention between the Board of Health and those who lay pipes into dwellings, and the board has selected W. J. Atwater as the man with whom they will fight out the question as to whether the ordinance concerning the laying of sewer pipes within 10 feet of and in the cellars of buildings calls for iron or vitrified pipe. This has been a moot question for a long time and a number of the plumbers have undertaken to have the Ordinance Committee make the ordinance so that vitrified pipe can be used as well as iron, but the committee has failed to agree and thus the ordinance remains a disputed point. It is claimed that the section which pertains to the point at issue is not clear and leaves the kind of pipe to be used optional with the plumber. It reads as follows:

"SECTION 6. Where it is necessary to lay soil pipe under the ground it shall be of a quality known as extra heavy pipe. The pipe passing through the walls of the building, and to a distance outwardly of at least ten (10) feet from the inside face of foundation walls shall also be extra heavy. All cast iron pipe must be sound and free from holes and other defects, of a uniform thickness, and of not less than the weights specified below for the corresponding diameters, and before use shall be thoroughly coated inside and out with coal tar or an equivalent substance."

TRAPS AND VENTS.

IN THE OFFICIAL CALL for the thirteenth annual convention of the National Association of Master Plumbers, sent out from New York City under date of April 27, it was erroneously stated that the convention would be held in the Chestnut Street Opera House. By a later arrangement the convention will meet at the Walnut Street Theater, which is within 200 feet of the Continental Hotel.

WATSON & TOSSELL, Finn & Fischer, Sullivan Plumbing & Heating Company and John Young, Bay City, Mich., have written a joint letter to the local papers in answer to some allegations made by a member of the school board in reference to the bids for plumbing in a new school. They point out that the specifications were very faulty and called for some equally faulty sanitary apparatus and that in their bids they ignored these defects and bid on a properly arranged system with proper fixtures.

THE EXAMINING BOARD of Plumbers of New York City is composed of Col. George D. Scott, formerly of the Eighth Regiment; Horace Loomis, Engineer of Sewers; James O'Brien, Jr., E. McGovern and Michael Ryan. The last three members are plumbers.

THE GORRY FOUNDRY of Willimantic, Conn., has been purchased by the Vanderman Plumbing & Heating Company for \$7000. The plant will be used by the company in their business of manufacturing plumbers' specialties and heating apparatus.

SCHOELKOFF & EISENBISE, plumbers, are erecting a business place on Schuykill avenue, beyond Hockley's, Reading, Pa.

THE PROCTOR HEATING COMPANY have been incorporated at Chicago, with a capital stock of \$10,000, to do a general plumbing business; the incorpor-

ators are Thomas Y. Fitzgerald, Alfred D. Proctor and Hart J. Fitzgerald.

AN IMPORTANT EXHIBITION of plumbing and sanitary goods is to be held this month in Paris, France, under the auspices of all the departments of the state concerned in sanitation. Leading sanitarians and plumbers of France are said to be taking a lively interest in securing the success of the exposition. English manufacturers in this line will, it is believed, make a good showing, but it is feared that American houses will not be very numerously represented.

BARLOW BROS., Waterbury, Conn., have bought a lot 75 x 70 feet for the extension of their plumbing, heating and tinning business.

THE APPLICATION of the Master Plumbers' Association of Toronto, Canada, to the City Council for certain specified amendments to the plumbing by-laws of the city is attracting a great deal of attention, not only from the local trade, but also from plumbers at other points all over the Dominion. Among the amendments are one for a reduction in the plumber's license fee from \$10 to \$1; for a specified weight for soil pipe at 12 to 13 pounds, and the abolishment of the front wall trap and fresh air inlet, letting the house drainage system ventilate the sewer.

SOIL PIPE from the United States has invaded Canada to an extent that has interfered with the production in that country.

AFTER AN IDLENESS of more than a year the factories of the Akron Sewer Pipe Company, Akron, Ohio, are again in full operation.

CHARLES J. & F. E. TAYLOR have moved their plumbing establishment from its former location on South Allegheny street to the basement of the Orider Building, Bellefonte, Pa.

WILLIAM THUMBRE, plumber, gas and steam fitter, Easton, Pa., has opened a shop in the basement, 245 Northampton street.

A GENTLEMAN who has recently returned from England regales a Boston reporter with these bits of gossip: "There was an Englishman who prided himself upon his ability as an amateur plumber. He decided to put gas connections into his house and do it himself. He went to work with a great flourish; hammered and soldered and fitted away, and at last came the hour of final triumph. He called the family into the parlor beneath the great chandelier. He turned the taps, with taper in hand—and vigorous showers of water gushed forth over them all. He had made the mistake of connecting with the water pipe instead of the gas pipe."

COLWELL LEAD COMPANY, New York, are showing in their Centre street windows a mammoth Barry drum trap, made by the Barry Mfg. Company, Muscatine, Ia. This trap is for use in connection with kitchen sinks, to prevent grease getting into the drainage system and stopping the piping.

THE FOLLOWING plumbing establishments have recently been started in Chicago: William S. Kneisly, 18 Twenty sixth street; Henderson & Thoiné, 23 North Ashland avenue; J. J. Curlin, 4939 South Ashland avenue; William Ingram, 1242 East Ravenswood Park; Powers & Schirmer, 1909 West Madison street; Charles J. Freehauf, 316 West Chicago avenue.

THOMAS KELLY & BROS. have removed from 124 Franklin street to 201 East Madison street, Chicago. They have secured much larger space than before, now having a room on the ground floor 30 x 180 feet, with a basement of equal size. They will use the ground floor as an office and show-room, and the basement for machinery and brass foundry. They will have vastly improved facilities for making and handling their specialties in closets, &c.

The five master plumbers of Sterling, Ill., have commenced the formation of a Master Plumbers' Association, to be a branch of the National Association. The details are not yet fully completed, but Louis G. Spica is president and Wm. F. Lawrie secretary.

JOHNSTON & MEYER, St. Louis, Mo., have been awarded the contract for plumbing, gas fitting and sewerage of six stores and flats erected in that city at Broadway and Allen street. This concern report an excellent demand for their National combination sink and trap which they recently placed on the market.

THE PLUMBING FIRM of Haslet & Weber, Mechanicsburg, Pa., has been dissolved and Mr. Haslet will continue the business at the old stand.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

PARK BROS., 79 Dearborn street, Chicago, have the contract for the plumbing and drainage in the residence of D. M. Hayes, 2223 Jackson boulevard.

D. F. DEWAR & Co. 335 Sixty third street, Chicago, are to do the plumbing and drainage in the apartment building of E. P. Shandberg, Dickey and Sixty-fifth streets.

KENNEDY & O'CONNOR, 243 Ninety-second street, Chicago, have the contract for the plumbing and drainage in the flat building of A. F. Hagman, 8700 Buffalo avenue.

THOMAS E. ROBINSON, 2715 South Halsted street, Chicago, is to do the plumbing and drainage in the flat building of Frederick Schick, 46 Twenty-fourth street.

J. REILLY JR., Bridgeport, Conn., has just received the contract for the plumbing of the new schoolhouse of the church of the Sacred Heart, on Park avenue.

ROCHE & MCGUIRE, New London, Conn., are plumbing Mrs. Scowbee's handsome new residence at Fisher's Island.

A NEW GYMNASIUM is to be built for the Bangor (Me.) Theological Seminary. The building will be of brick, 42 x 80 feet, and will cost \$10,000.

J. F. BRADY, Bridgeport, Conn., has the contract for the plumbing in a new house for K. Klein.

THE MCCORMACK HEATING COMPANY of Wallingford have just completed the setting and piping of two of their boilers in the Hotel Majestic, on Chapel street, New Haven. The building is provided with 123 direct radiators, while the 46 bathrooms are heated by 2-inch stand pipes.

THE PLUMBING CONTRACT for the new Lynnfield hotel has been awarded to Frank A. Wendell, Salem, Mass.

THE FOSKETT & BISHOP COMPANY, New Haven, Conn., have the heating and plumbing contract for the new residence of Geo. B. Woolson.

S. E. DIBBLE, New Haven, Conn., has the contract for the heating and plumbing of the new St. John's Church on George street, and also for the St. Elmo Club House on Grove street.

SEALED PROPOSALS will be received at the Bureau of Medicine and Surgery, at Washington, D. C., until 1 o'clock p.m. on Saturday the 25th day of May, 1895, for repairing and renovating, plumbing, heating, &c., the Naval Hospital at Brooklyn, N. Y., in accordance with plans and specifications which can be seen upon application to the Bureau of Medicine and Surgery, Navy Department, or the Superintendent of Repairs at the U. S. Naval Hospital, Brooklyn, N. Y.

THE "BLINGTON ARCADE," to be built at Stamford, Conn., in the two upper stories will have two apartments on each floor, consisting of parlor, library, dining room, kitchen, two chambers and bathroom, with fire places, gas logs, tiled hearth, and bath room floors, open plumbing, &c. The heating is to be done by Richardson & Boynton's hot air furnaces, gas logs and open fire places.

THE BUILDING COMMITTEE of the Board of Supervisors of Oswego, N. Y., awarded a contract for supplying a heating apparatus for the new County Clerk's office to the Fitzgibbons Boiler Company for \$1453. John C. Sullivan placed the bid for the Fitzgibbons Company and will do the plumbing work and steam fitting in connection with the contract.

THE COUNTY COMMISSIONERS at Fitchburg, Mass., ordered that the Court House be entirely replumbed. Brownell & Mason will do the work under the supervision of H. M. Francis.

THE CONTRACT for heating and ventilating the Nonstuck school building, at Holyoke, Mass., was awarded to the Fuller & Warren Company, whose bid was \$4900, with an allowance of \$250 for old machinery. The contract for the Hamilton street school building went to Kennedy & Sullivan for \$2425.

BABB, WITHAM & KELLEY, Bangor, Maine, are putting a hot water heating system into the residence of Charles Woodman, Broadway.

THE PUBLIC PROPERTY COMMITTEE of Gloucester, Mass., held a meeting last week and voted to accept plans for the heating and ventilation of the Magnolia schoolhouse.

JASON KIDDER, Franklin, N. H., has the contract to remodel the heating arrangements at Hon. Charles E. Tilton's residence.

THE COURT HOUSE of Nodaway County, Mo., is to have a new heating plant, but as yet the system has not been selected.

BIDS will be received at the office of the City Clerk of Racine, Wis., until May 18, for a heating and ventilating system for the addition to the Seventh Ward School Building.

THE CONTRACT for heating the new jail at Blue Earth City, Minn., has been awarded to the Windsor Heating Company.

THE HOPSON & CHAPIN MFG. COMPANY of New London, Conn., have the contract for supplying the heating ap-

paratus for the new Christ Church at Ansonia. James Keating of New London is in charge of the work. The system will be hot water.

BROWNELL & MASON, Fitchburg, Mass., are remodeling the plumbing in the Court House.

J. C. HICKEY & Co., 551 Ashland avenue, Chicago, have the contract for the plumbing and drainage in the flat building of J. M. Gallagher, 12 Hastings street.

H. BREYER, JR., 1725 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the flat buildings of M. M. Kimbell, 1421 to 1423 Kimbell avenue.

WILLIAM BOWDEN, 238 Twenty-fifth street, Chicago, is to do the plumbing and drainage in the flat building of D. A. Roche, 2639 Armour avenue.

JOHN MCCOURT & Co., 3450 Indiana avenue, Chicago, have the contract for the plumbing and drainage in the flat building of H. Hagman, 3759 Thirty-seventh street.

THE J. F. ALLES PLUMBING COMPANY, 233 Lincoln avenue, Chicago, are to do the plumbing and drainage in the flat building of E. Gehrke, 61 Bissell street.

STEINER & REID, 918 West Twenty-first street, Chicago, have the contract for the plumbing and drainage in the flat building of Herman Janske, 829 same street.

J. STEWART, 6506 Wertworth avenue, Chicago, has the contract for plumbing and drainage in the residence of E. S. Paillips, 6611 Carpenter street.

RICHARD TAIT, 605 Sixty-ninth street, Chicago, is to do the plumbing and drainage in the residence of H. Brake, 7028 Farnell avenue.

F. A. FISHER, 5329 Lake avenue, Chicago, has the contract for the plumbing and drainage in the flat building of J. Schen, 17 Bingham street.

FRANK MEEK, 455 West Eighteenth street, Chicago, is to do the plumbing and drainage in the residence of James Connell, 92 Mohawk street.

CHARLES C. BREYER, 187 West Division street, Chicago, has the contract for the plumbing and drainage in the flat building of Julius Casper, 350 N. 19th Robey street.

P. EICHENBAUM, 815 Armitage avenue, Chicago, has the contract for the plumbing and drainage in the flat building of R. F. Coles, 1039 Braist avenue.

The United Asbestos Company of Dock House, Billiter street, London, England, have recently introduced a new and specially efficient form of covering for steam pipes, consisting of blocks of asbestos secured by strips to a backing of asbestos cloth. Owing to the method of construction this covering can, it is said, be wrapped around the pipe about as easily as if it were a single layer of cloth. The blocks of asbestos, however, bring the thickness of the insulating material up to about 1 inch. The material is made in long strips and is intended to be wrapped around the pipe spirally.

The Board of City Affairs of Dayton, Ohio, have decided to make considerable extensions in the sanitary sewer system of the city.

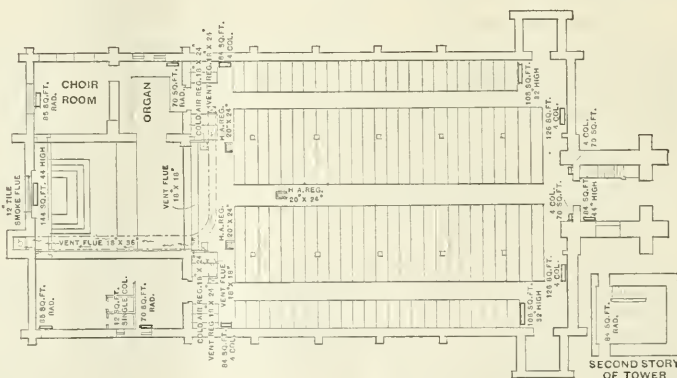
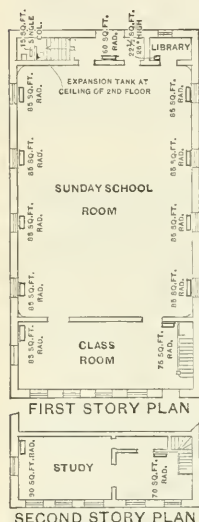
STEAM AND HOT WATER.

A Hot Water Heating and Ventilating System.

The St. George's Episcopal Church, Flushing, N. Y., is one of the landmarks of Long Island. The original church, now used as a chapel, was built on the site of the present church about 100 years ago. It is a frame building shingled on the outside. About 40 years ago it was found necessary to increase the size of the church. The old building was moved to a new foundation on the side street and a stone church erected in its place; since which time the old building has been used as

1, the church being 60 x 120 feet, with a varying height of ceiling averaging about 22 feet, and contains 160,635 cubic feet of air space, and the chapel, which is about 20 feet distant, is 40 x 30 feet, with 20 feet height of ceiling in the main schoolroom, and contains 55,830 cubic feet of air space. The church has a seating capacity of 850 to 900, and, as it is only occupied for one and a half hours twice a week, it was decided to provide for natural ventilation, with indirect radiation to furnish sufficient warm air to change the air in the auditorium once per hour. The hot water heating system, with direct and indirect radiation, was decided on, and 1000 square feet of extra wide Perfection pin indirect radiation was placed in four stacks in a brick casing, as shown in Fig. 2. A cold air supply, 20 x 36 inches, was taken from outside the building on the north side. Cold air was also taken from two points inside the church, and dampers arranged

The chapel building and each section of the mains in the church building were controlled by valves. The expansion tank was placed on the second floor of the chapel and circulated from the nearest flow main, and a separate expansion pipe was carried back to the heaters inside of valves. The mains run about 150 feet each way from the heaters, running side by side and rising 1 inch in 10 feet. The mains underground to the chapel are placed in a box of 2 inch hemlock, tarred on the outside and with a drain below it to carry off the surface water; the ends of the box being carried from inside of wall to inside of wall and the pipe covered with asbestos paper, hair felt and canvas, with an air space. The 3-inch main supplying the indirect stacks drops from the point where it leaves the main, so that no air valves were required on the stacks. Each direct radiator was fitted with a Mackay quick opening valve, a union elbow and a keyed lock



A Hot Water Heating and Ventilating System.—Fig. 1.—Showing Plan of the Church and Chapel.

a chapel and Sunday school. The chapel has always been heated by stoves or room heaters, while the church was heated by three large brick set hot air furnaces, with no means of ventilation, except such as could be obtained by opening the windows.

In the spring of 1894 it was decided to enlarge the building, renovate it throughout, add modern improvements and a system of heating and ventilation. The work was placed in charge of J. King James, architect, 126 Liberty street, New York. The heating and ventilating system was designed by W. M. Mackay, heating engineer, 211 Water street, New York, who has planned the heating and ventilating of several hundred church buildings during the past 25 years; the system was installed by J. D. & C. C. Lincoln, heating contractors, 236 Water street, New York. The plant was completed in October, 1894, and has been in constant operation since that time, and has proved efficient during the past winter. A plan of the buildings is shown in Fig.

so that all the air could be taken from either point or part from both, as desired or found necessary, as shown in section in Fig. 2. Warm air was delivered at three points in the church auditorium through 22 inch round galvanized warm air pipes, with 20 x 24 inch registers.

The intention was to heat the auditorium to 65° F. and all other parts of both buildings to 70° F. in the coldest weather. Fourteen hundred and ten square feet of New Standard direct radiation was placed in the church building, arranged in 16 radiators, as shown on plans, and 1097½ square feet of New Standard direct radiation was placed in the chapel building in 15 radiators. Two No. 25 Royal water heaters, manufactured by Hart & Crouse, Utica, N. Y., each having a rated capacity of 2300 square feet of direct radiation, were placed as shown. It was found necessary to carry the mains as shown on plans, as the basement of the church was not excavated, except at the points where the old furnaces were located.

shield air valve. The mains in the basement were covered with Manville lamb's wool covering.

For ventilation a flue 3 x 3 feet with a 12 inch round tile smoke flue in center was carried up at the rear of the new part of the building. The smoke pipe from the heaters was connected to the flue, and also an arrangement made at the base of flue so that a fire could be maintained during the summer months when necessary. Ventilating registers were placed at two points in the church and connected to the vent flue by galvanized ventilating pipes.

The apparatus, we understand, has done all that was claimed for it in an economical manner, consuming less coal than was formerly used in the furnaces for heating the church alone, while furnishing ample heat at all times for all parts of the building. The ventilating system has worked perfectly and proved ample for the requirements. The cost of the heating and ventilating apparatus, not including the vent flue or smoke stack, was \$3500.

HEATING NOTES.

J. H. COLEMAN, Jr., manager of the Boston office of the J. H. McLain Company, Canton, Ohio, visited *The Metal Worker* office this week. Mr. Coleman has his headquarters at 51 Oliver street and is prepared to give full particulars in reference to the line of Humber, Cambridge and Yale steam and hot water heaters, and is showing the new Cornell for steam and Princeton hot water apparatus of the vertical section type.

FIVE BROS., Reading, Mass., have recently bought the heating business formerly carried on by H. K. Austin.

HAYES & FALLS, 290 State street, Rochester, N. Y., are sending to the trade catalogues descriptive of the Torrent steel water tubs boiler which they manufacture. The catalogue is of oblong shape and contains a general view of the boiler with the brick work broken away, showing the tubular ar-

others with lantern roof. Cuts are shown of rafters, purlins, ridge and side brackets, fittings for bench frames, crestings, and all of the various material required for the construction of a greenhouse. These are followed by 40 pages of half tone engravings, showing palm and rose houses and commercial greenhouses, some of which are very handsome in appearance. One of the illustrations shows the curvilinear palm house which they had on exhibition at the World's Fair, and which is now erected on the grounds of James Weir, Jr., & Son, at the eastern entrance of Greenwood Cemetery, Brooklyn. A number of handsome conservatories are shown erected in connection with residences. All of the houses are heated with the Hitchings hot water boilers.

THE AMERICAN RADIATOR COMPANY, 111-113 Lake street, Chicago, and 92 Centre street, New York, have just issued a superb volume enti-

constructed with extended surface and supporting a radiator section in which the feed chute is placed and which supports the smoke radiator, which is of novel construction, presenting a large heating surface and effecting indirect draft. From the top of the "clinker punch" are two arms running into the combustion chamber carrying fresh air into the furnace at a point where it is said to mingle with the gases and improve the combustion. An Oxford regulator is furnished with each furnace for controlling the fire. The last pages in the book are devoted to tables giving dimensions and ratings of the capacity of the furnace.

LOCKWOOD & ADAMS have moved to 143 Centre street, New York, where they are arranging their sample room to make a display of steam and hot water radiation.

WALTER PENDLETON, manager of the New York office of the Niagara

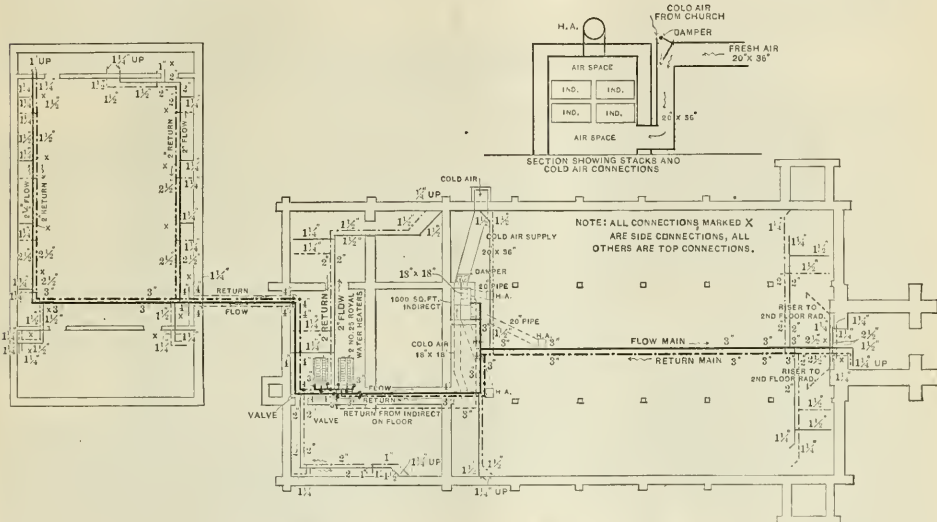


Fig. 2.—Showing Location of Boilers, Mains and Radiation.

range and the position of the fire. A sectional view is also presented, illustrating the course of the products of combustion and of the circulation of the water. With these illustrations are full descriptive particulars, and there are likewise presented some particulars of an evaporating test made with the Torrent boiler, which showed a result of 1½ pounds of water evaporated to a pound of coal. A table gives full particulars of sizes, capacities and prices, and at the close are testimonial letters from a number of people who have used the boiler with the most satisfactory results. Reference is likewise made to horizontal steel tubular boilers which they manufacture. All those interested in the heating question are asked to send for a copy of the publication.

THE NEW CATALOGUE issued by Hitchings & Co., 233 Mercer street, New York, devoted to modern greenhouse construction, is a handsome piece of trade literature. The first few pages call attention to several of their trade specialties for the erection of even span and three quarter span greenhouses, with non-freezable gutters and patent sash opening apparatus. Some are shown with curvilinear rafters and

titled "American Architecture." It contains a large number of fine engravings illustrating buildings in the territory covered by their New York office which are heated with American radiators. The engravings are photographic reproductions, printed on heavy plate paper, and in themselves are valuable as showing the modern type of architecture displayed in office buildings, hotels and other large structures. The names of architects and heating contractors are given in connection with each building. A list is also given of other buildings of note in the same territory which are heated by American radiators. The book is well worthy of preservation, being so handsomely gotten up that it is really a souvenir.

THE J. H. McLAIN COMPANY, Canton, Ohio, are issuing a 16 page pamphlet in a deep orange cover with an embossed gilded title devoted to their Oxford perfect blast furnace. The text is printed on fine paper in two colors of ink, a dark green and a rich brown. The half-tone engravings show the furnace finished complete and in various stages of completion. The furnace has a large ash pit, in which is suspended a center slide grate. Above this is the fire pot,

Radiator Company of Buffalo, N. Y., has just received another carload of Niagara radiators at the New York warehouse, at 56 Franklin street.

THOS. P. CUBRINO, well known to the customers of the John Simmons Company, New York, is now in the city for a few days preparing for another trip among the steam fitters and plumbers.

E. P. FOSTER of the Electric Heat Regulator Company of Minneapolis, Minn., has opened an office at 89 Centre street, New York, where he has their heat regulating governor placed so that its operation can readily be seen by steam and hot water fitters, who are invited to call and inspect it.

JOSEPH BOND, president of the American Radiator Company, was a guest at the New York office this week, having just returned from his trip to Europe. During his absence he established an agency for the line of American radiators in London, England.

THOMAS W. WEATHERED'S SONS are displaying three of their hot water apparatus in front of their headquarters at 141 Centre street, New York. The display is rather striking, as one of their

smallest boilers is placed alongside of one of their largest boilers, showing a vast difference in size.

TREASURER W. H. Pfahler of the **Abram Cox Stove Company**, Philadelphia, was a visitor among the heating trade in New York this week.

F. H. PATRICK, one of the traveling salesmen of **Smith & Winchester**, Boston, dealers in everything for gas, water and oil, was a visitor among the heating trade of New York, stopping at the New York office, this week.

JOHN A. SCOLLAY, 74-76 Myrtle avenue, Brooklyn, and 89 Centre street, New York, is issuing a pamphlet in the interest of the invincible vertical section drop tube hot water boiler. One of its statements is, "The invincible is the natural development of two generations of experience of our house in the hot water business." The pamphlet describes the construction and points out the features claimed for it in detail, 12 claims being made. The last two pages are devoted to giving the price-list and ratings of the boilers for residences and for greenhouse heating.

THE NEW YORK HEADQUARTERS of **Smith & Winchester** of Boston have been transferred to more commodious and handsomely fitted quarters at 141 Centre street, New York. Secretary **N. E. Frost** presides over the steam and hot water department in the interests of the Winchester boiler. Preparations for a line of samples consist of a platform extending around the room, covered with a red velvet carpet. Mr. Frost's desk is inclosed behind a polished brass railing. A handsome chenille curtain, suspended from an ornamental pole, drapes the doorway to the pump and windmill show room, which is presided over by Mr. Carter. A conspicuous feature of this room is an 8 foot galvanized iron S. & W. windmill. Arranged beside it are several kinds of pumps and samples of a variety of their goods for artesian and driven wells. At the entrance to their office, by the door, is a Winchester boiler, and above it is a handsome sign in gilt and black giving the address of the firm and the specialties dealt in by the house. **J. W. Fryer** will travel for the house in the interest of the Winchester steam and hot water goods.

J. J. WILSON has resigned his position as salesman and heating engineer with the **Fuller & Warren Company**, Troy, N. Y., and is now at his home 1613 E. Chase street, Baltimore, Md.

AS A RESULT of the work of State Vice-President of Illinois **John W. Mills** of Chicago, a State association of Master Steam Fitters, with a membership of 60, was formed during the plumbers' convention at Rock Island, Ill., last week. The officers are: President, **T. B. Davis** of Rock Island; vice-president, **L. P. Hopkins**, Springfield; secretary, **John O'Neill, Jr.**, Peoria; treasurer, **John G. Roland**, Chicago. These officers and Mr. Mills are the Executive Committee of the association.

ALEXANDER DON, manager of the New York office of the **W. H. Page Boiler Company** of Norwich, Conn., has his show window at 61 Gold street occupied by a No. 15 All Right and No. 1 Volunteer hot water boiler and a No. 2 Volunteer steam boiler. Outside of his showroom is used for displaying the All Right and Volunteer boilers, steam and hot water heating apparatus being placed alternately from the smallest size to the largest size, which is the

Volunteer steam boiler, rated to carry 1500 feet of radiation. A space is reserved at the center of the same room for displaying a Page safety sectional boiler, and the interests of the line of boilers will be looked after in Pennsylvania by **J. A. Donnelly**, formerly with the **Smith and Anthony Company** of Boston, and in New York State by **Chas. V. Haynes**, formerly with the **King Manufacturing Company**, Troy, N. Y.

FLASHINGS.

J. REILLY, JR., Bridgeport, Conn., has about finished the metal work on the St. Augustine's church. Besides the handsome copper cross which he has just placed on the top of the spire, he has taken the slate from the sides of the clerestory and substituted galvanized iron in imitation of stone. Mr. Reilly has lately taken up the cornice business and is doing considerable in this line.

W. H. MEERER & Co., South Norwalk, Conn., have the contract for the tinning and plumbing of the new building of the **Norwalk Iron Works**.

THE METALLIC ROOFING COMPANY of Canada, Limited, Toronto, Canada, issued their handsome illustrated catalogue for 1895. It is a volume of square shape, contains 100 pages and bound in brown paper covers, the front cover having the design and title printed in bronze. The early part of the volume relates to metal roofs, comparing them with other forms and showing their advantages. The first illustrations show the Eastlake shingles and similarly illustrate the Eureka Diamond tiles; Spanish tiles and Thor's steel roofing come next, and various sorts of crimped roofing, roll cap roofing, &c., are noted. Steel pressed brick, rock siding, steel clapboards are illustrated; special valleys are shown and likewise ridge caps. Conductor pipes, eave troughs and iron shutters follow. Corrugated iron is noted at some length and its various applications illustrated and described. A long chapter is given up to paneled and embossed sheet metal ceilings, of which many handsome designs are presented. At the end of the volume illustrations show a number of different prominent buildings upon which the products of the **Metallic Roofing Company** are used.

THE TUCKER MFG COMPANY, successors to the **Sims Mfg. Company**, Newark, Ohio, publish their catalogue for 1895, which will be of particular interest to the roofing and cornice trade. It is a volume of convenient size, bound in paper, with gilt title, and contains over 50 pages. The line of goods referred to embraces a very extensive assortment of roofing specialties. A place of prominence in the beginning of the publication is given to **Sims' eave trough**, which is well-known to the trade. The trough is fully described and illustrated in many different views, and a price list is presented. Conductor pipes of various sorts are similarly referred to, and attention will be attracted by the malleable conductor heads for square corrugated pipe, which are of handsome design. A number of different malleable conductor bands from 2 to 5 inches, for square and round pipe, are illustrated. Next follow adjustable elbows, corrugated elbows and shoes, pipe fasteners, hooks, strainers, &c. Two pages are given to the **Tucker hanger** for eave troughs; then other styles of hangers are illustrated

and described. Ridge rolls, roof gutters, ridgings and creatings follow in the order named, after which attention is given to galvanized iron cornices. Finials are shown in many different designs, and toward the end of the pamphlet attention is given to metal ceilings, siding, chimney tops, &c. At the close is an alphabetical index.

A. H. BUCKINGHAM, New Haven, Conn., has the contract for the metal work on the new St. Elmo club house on Grove street; **F. L. Leighton & Co.'s** new store building in Wallingford, and the new Rafael flats on Oak street.

Much sympathy will be felt with **John K. Allen**, publisher of *Domestic Engineering*, whose mother, **Mrs. N. B. Allen**, died last week. Mrs. Allen, who was of New England parentage, was born in Union N. Y., in 1836. She married **John M. Allen** in 1846, and resided at Gaea Lake, Mich., for twenty one years, later removing to Lansing, where she lived until 1888, when her husband died. She then went to Denver, where she resided with her daughter. The funeral was held at the latter's house last Sunday afternoon.

Last week the **Pittsburgh Reduction Company** of Pittsburgh, Pa., manufacturers of pure aluminum, shipped a carload of aluminum plates to the **Herreshoff shipyard** at Bristol, R. I., for use in the construction of the racing yacht "Defender." The plates are about 12 feet long, vary in width from 23 to 30 inches and are $\frac{3}{8}$ inch thick. They are for the top sides of the yacht and are lighter than the plates of manganese bronze that will be below the water line. To give them added strength and ductility it is stated that the new plates contain about 10 per cent. of copper.

Experiments which were recently undertaken by the Army Department to ascertain the suitability and durability of aluminum for army canteen purposes in connection with such articles as knives, forks, spoons, plates and dip-pers, are reported as not having turned out so entirely favorable to the metal as its friends would desire on account of the alloys used for hardening it not being found suitable. The knives, forks and spoons used for the experiment contained a considerable alloy of copper, and the medical members of the board were of the opinion that the presence of this metal would probably prove detrimental to the health of the men using the utensils. Nevertheless, the military authorities have not given up the idea that aluminum will some day enter largely into the composition of many articles used in the military service. In addition to table and kitchen ware it will very likely be utilized to a considerable extent in the manufacture of portions of harness, insignia and military trappings generally.

The conning tower of the battle ship "Massachusetts," now building at Cramps' shipyard, which has been recently completed by the **Bethlehem Iron Company**, is one of the largest steel castings ever made. It is a hollow cylinder 7 feet 3 inches in diameter and a little over 7 feet high, and is cast in one piece, like a locomotive tire. When placed on board the "Massachusetts" it will be topped by the wooden pilot house, from which the ship is steered when not in action.

Mammoth Tubular Furnace.

MaGill & Diedrich, Bloomington, Ill., are manufacturing a tubular furnace adapted to the use of hard or soft coal or wood. It is made in 15 sizes, suitable for use in buildings of any character. The accompanying illustration shows their new Mammoth furnace, especially designed for the warming and ventilating of schools, churches, court houses, large residences, &c. Part of the furnace is shown broken away to expose the interior construction. It is built entirely of cast iron. The sides of the fire pot are corrugated, to prevent damage from expansion and contraction as well as to furnish greater heating surface. The fire pot is protected by perforated linings, which can be easily removed and replaced by new ones at but

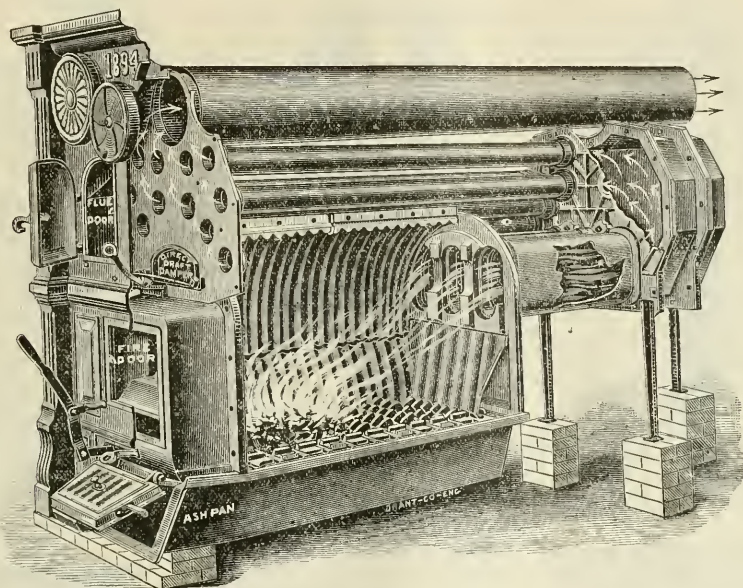
ing gas or smoke. The size shown weighs 5400 pounds. A common complaint against furnaces burning bituminous coal is that the flues become clogged and inoperative from soot forming in them. This difficulty is overcome by making the flues easily accessible for cleaning from the front of the furnace through the fuel and feed doors, as shown in the illustration.

Manual Instruction in Australia.

We have received from Melbourne, Australia, a copy of the 1895 prospectus of the Workingmen's College in that city, an institution founded in the year 1883 "to improve the education of workmen and to facilitate the attainment of a more thorough knowledge of handicrafts, arts, sciences and lan-

course, to those students who pass these examinations successfully. "Experts' certificates" are given to students who, after having gained the ordinary certificate, complete another year's course and pass an additional examination in the higher branches of the subjects studied. Unfortunately, no details are given in the prospectus with regard to the curriculum or general plan of instruction followed. In the plumbing and gas fitting classes one evening each week is devoted to theoretical instruction by means of lectures.

The college is evidently in a very flourishing condition, as mention is made of the fact that as many as 2600 students were enrolled during one quarter. The total cost of the buildings and equipment of the institution is said to have exceeded \$250,000. Its operations cover quite a wide field of educa-



Mammoth Tubular Furnace.

slight expense. The rocking grates are operated from the front of the furnace by a lever arrangement, so contrived that when the lever is taken out of the socket the grates are locked, making it impossible for them to dump when firing or when a poker is run over the grates. An ash dump directly under the fuel door facilitates the removal of ashes and clinkers, by removing them from the fire chamber to the ash pan without taking them through the fuel door, thus obviating complaint on account of dust. A specially noticeable feature of this furnace is the distance from the combustion chamber to the flue. In the No. 8 furnace, for instance, which is the one illustrated, the smoke and other products of combustion travel a distance of 40 feet before entering the flue, thus pretty thoroughly extracting all the heat to be derived from the fuel and necessarily effecting great economy. The passage of the smoke is clearly indicated in the illustration. The tubes are cupped and the sides flanged and put together with asbestos cement, then tightly bolted with $\frac{1}{4}$ inch machine bolts, so that no danger exists of escap-

guages." From this prospectus are gathered the following facts in regard to this institution: The work of the college is divided into a number of separate departments, one of which is termed the Department of Mechanic Arts, where instruction is given, by means of evening classes, in carpentry, plumbing and gas fitting, metal turning and fitting and coach building and carriage drafting. The minimum age for admission to these classes is 14 years.

In the plumbing and gas fitting department the instruction is progressive, there being three separate classes or grades in which are taught, at different times, both the theory and practice of the trade. Fees of \$2, \$2.50 and \$3 per quarter are charged respectively for each term in the three grades. Juniors under 18 years of age and indentured apprentices under 21 are admitted at half these fees. The class work of each year is divided into four terms of ten weeks each. Examinations are held in July and December of each year. The ordinary certificate of the college is granted, at the end of a two years'

tion, the departments being as follows: Literary and Commercial; Mathematics, including arithmetic, algebra, geometry, mensuration and trigonometry; Science, including geology, mineralogy, theoretical and practical chemistry, dynamics and heat, and magnetism and electricity; Art and Applied Art, including free hand drawing and painting, modeling, gilding and marbling, sign painting, &c.; Engineering, including instruction in practical plane and solid geometry, steam and steam engine, surveying, applied mechanics, mechanical drawing, &c.; Architecture, including building construction, architectural drawing and sanitation; Agriculture and Rural Industries; Household Economy; Music; and separate subjects, such as Photography, Telegraphy, &c. The fees for all these courses appear to be low enough to place them within reach of everybody.

Some Australian capitalists have lately visited Gloversville, N. Y., with a view to the establishment of a silk mill at that place.

THE RETAIL STORE.

Myers' Spray Pumps.

F. E. Myers & Bro., Ashland, Ohio, are putting on the market the three spray pumps here shown, in addition to those already offered by them to the

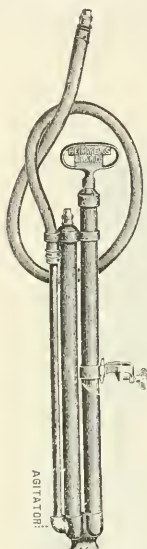


Fig. 1.—Imperial Brass Spray Pump.

trade. The Imperial pump, shown in Fig. 1, is described as being compact, unusually strong and of large capacity; as having an adjustable fastener for any height or shape of pail; as being provided with a removable cap, so that the



Fig. 2.—Knapsack Spray Pump.

buckets can be taken out without disarranging the pump; as having double leather plunger buckets, ground brass valve seats and superior valve, and as

being fitted with an agitator and improved combination nozzle, fitted for sprayer and pipe extensions. The knap sack pump, Fig. 2, is made of first quality galvanized iron, with round corners, a removable strainer and tight lid. The pump is fitted with adjustable straps, so as to be carried on the back, or it may be carried by the bail, as shown by the dotted lines. It is tapped

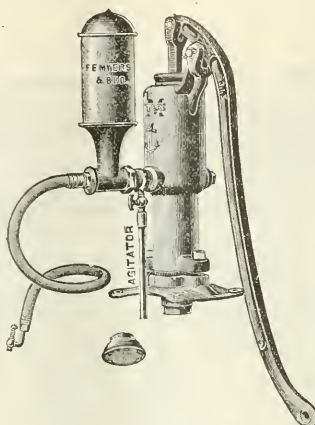
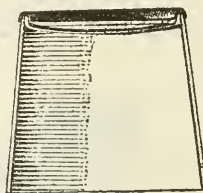


Fig. 3.—Barrel Spray Pump.

at both right and left hand lower corners and fitted with brass female ends, to which the hose is attached, both of which may be used at the same time. It is explained that when one hose only is used the other opening is closed with a metal plug furnished for the purpose. It is stated that the hose and bulb are made of the best white rubber, and are protected at each end by coiled wire to prevent breaking; that the valves are of brass, so as not to corrode, having large openings to permit the free flow of water and to shut off immediately when under pressure. The nozzle is of brass, nickel plated, with 50 small openings, throwing, it is claimed, a spray 6 feet wide at a distance of 12 feet. The pump holds 5 gallons and weighs 52 pounds when full. The barrel spray pump, Fig. 3, is constructed with a base adapted to be fastened on sinks and platforms, so it may be used for a house force pump in cisterns, shallow wells, or at any place where a neat, powerful force pump is required. When used for house purposes it is furnished, it is remarked, with a discharge spout, elevated to the proper height. The cut shows the pump fitted with an extra large air chamber. The cylinders, brackets, valves and valve seats, it is explained, are of brass. The manufacturers state that the pumps have proved themselves a decided success when used for whitewashing, the high pressure put on the fluid causing it to penetrate the crevices in the surface.

Truss Bottom for Fiber Ware Pails.

The cuts shown herewith represent a new bottom for their fiber ware pails, recently invented and introduced by the Standard Fiber Ware Company, Man-



Truss Bottom for Fiber Ware Pails.—
Fig. 1.—Section through Unfinished Pail.

kato, Miss., which they style a truss bottom, and which is claimed to be much superior to anything of the kind hitherto introduced. Fig. 1 shows the initial position of the side, bottom and steel band. In Fig. 2 is shown the finished pail after powerful steam rollers have compressed the bottom and side into one compact body and banded them together immovably by means of a steel band. At top and bottom the pail is strengthened and protected by means of cold rolled steel bands. By this system the company find that they have overcome the objections hitherto discovered in connection with the molded or seamless fiber ware pails—namely, that the bottoms were weak and had a tendency to soak up heavy or break from brittleness. They inform



Fig. 2.—Section through Finished Pail.

us that they have also succeeded in producing a new finish for their fiber ware which imparts to it a handsome appearance and at the same time renders it absolutely water proof.

MANNINO, BOWMAN & Co., 57 Beekman street, New York City, advise the trade that they expected by this time to have announced their new location, which they gave notice of February 15. The result of looking for a suitable second floor salesroom was, however, discouraging, so they have accepted an offer of their present store without the stock rooms where they have heretofore carried their line of Perfection Granite and Decorated Pearl Agate Ware for the local trade. After closing out what they have left in these lines they will have only their New York salesroom

and office at the old stand and will ship all goods from their factory at Meriden, Conn.

The Griswold Coffee Mill.

Griswold Mfg. Company, Erie, Pa., are putting on the market the coffee mill here shown. The mill is cast all in one piece, including the base, and is fastened on a wooden block. The top hopper box is covered with a neat revolving cover. The mill is provided with a stamped tin cup for receiving the ground coffee, the point being made



The Griswold Coffee Mill.

that this results in a neat, clean affair with no rough wooden drawer or corners to collect dirt. The mills, it is stated, are of the best cast double burr pattern, grinding very fine. They are furnished in black japan finish, neatly striped with gold bronzes.

Golden Crown Butchers' Meat Tray.

The Stuart & Peterson Company, Burlington, N. J., are introducing trays, one of which is here shown. The trays are made of iron, porcelain lined, with the outside finished in blue enamel, having an edge to protect the



Golden Crown Butchers' Meat Tray.

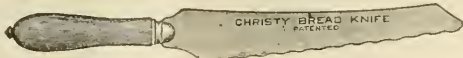
porcelain. The trays are referred to as being as necessary to a well appointed meat market as a marble counter, and doing away with wood trays, which become meat soaked and offensive in odor. The trays are designed for the use of butchers, dealers in fish, groceries, vegetables and also for confectioners. The trays are made in three sizes—from 29 to 36 inches long, 20 to 27 inches wide, and 2½ to 4 inches deep, each one being packed in a separate box ready for shipping. The company loan small models to customers for canvassing purposes, and furnish circulars on which their name does not appear.

Christy Model No. 16 Bread Knife.

The Christy Knife Company, 88 Chambers street, New York, are offering the bread knife here shown. The distinctive feature of the knife is the beechwood handle and German silver ferrule. The blade is described as made

of tool steel, nickel plated. It is made in one size only with blade 9½ inches long, and the handle 5 inches long.

with a ratchet lever fastened to the handle. By slight pressure on the end of the lever the yoke is readily pushed



Christy Model No. 16 Bread Knife.

The knife is designed for cutting hot or cold bread, cake, &c.

The King Grip Burner.

The lamp burner here shown with the King Grip is being introduced by C. A. Taplin & Co., Forestville, Conn. The burner is described as being made of heavy metal, rendering it strong and durable. The points of excellence claimed for the grip by the manufacturers are as follows: That it holds the chimney securely, preventing it shaking off; that it holds the chimney down



Fig. 1.—King Grip Burner.

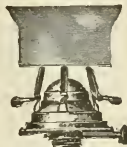


Fig. 2.—Chimney Ready to Apply.

firmly on the burner, giving uniform draft, clear light and perfect combustion; that the prongs being on the inside do not counteract the expansion of the chimney; that the prongs are always in position to receive the chimney; that the chimney is easily applied and removed; that the burner has an improved spring hinge for holding the cone down securely and that it is devoid of snaps.

open, so that the cloth or mop may be easily placed in position. Then by placing the mop on the floor and pressing down on the handle the cloth is fastened in securely. The adjustment is thus very simple, but positive. The mop is fitted with stained wood handles.

MEMORANDA.

H. C. LARSEN, 23 East Fourteenth street, New York, is making a specialty of the Advance mangle for smoothing table linen and all unstarched cloths and linens. It is adapted for use in private residences as well as in hotels and restaurants. Another of his specialties is the Christensen clothes line fastener.

C. SEYBOLD & SONS have begun business again at their old stand, 510 Clay avenue, Jeannette, Pa., where they are prepared to do tin, slate and gravel roofing, hot air furnace work, &c., and carry on a hardware business.

W. W. PRYOR & Co., factory selling agents, 81 Chambers street, are successfully marketing the Wire Cushion Glass Oil Can, manufactured by the Ohio Lantern Company, Tiffin, Ohio. It holds 1 gallon of oil, and has a tin top and bottom, with tin wire supports connecting the extremes. The cushion around the body of the Can, extending outward about ½ inch, is woven on and made of tinned spring wire. Besides being able always to see the contents of the Can, the small loss from breakage in shipping is referred to especially.

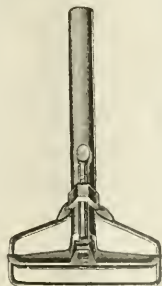
The New York Gas Tubing Company occupy the fourth floor of the large business building at 334 and 336 East Twenty-third street, New York City, where they operate a very complete plant for the manufacture of flexible tubing for use with gas stoves, portable gas lamps, speaking tubes, &c. The increasing demand for this class of goods has taxed the firm's resources to such an extent in the last few months that they have been compelled, in addition, to lease the floor above them in order to extend their plant. Their output of finished tubing last month amounted to 138,000 feet. Their increased facilities will, however, give them a further monthly capacity of from 50,000 to 60,000 feet. The company are proprietors of a patent for an improved end for their tubing formed of rubber, with a nickel collar, which they claim to be the most satisfactory thing of its kind on the market.

The selection of women for executive offices in cities is rapidly becoming common. The Mayor of Chicago has just appointed a woman, Miss Jane Addams, as garbage inspector in the Nineteenth Ward, one of the most unsavory sections of that city. The local papers speak of Miss Addams as a capable woman who is likely to carry out a difficult task satisfactorily.

The burner is designed to accommodate the ordinary sun bulb chimney.

The Arcade Mop Holder.

Here with will be found an illustration of a new mop holder which is manu-



The Arcade Mop Holder.

factured by the Arcade Mfg. Company of Freeport, Ill. The holder is made

STOVE TRADE NOTES.

Meeting of the National Association.

WEDNESDAY MORNING.

The twenty-fourth annual convention of the National Association of Stove Manufacturers was called to order in the beautiful banquet room of the Auditorium Hotel, Chicago, at 11 a.m. on Wednesday, May 1, by President George D. Dana, with the following members present:

Anthony, E. W., Smith & Anthony Company, Boston, Mass.
 Buttorff, H. W., Phillips & Buttorff Mfg. Company, Nashville, Tenn.
 Barbour, Geo. H., the Michigan Stove Company, Detroit, Mich.
 Brislend, James, Home Stove Works, Chicago.
 Brentano, August, Southern Stove Works, Evansville, Ind.
 Bell, Joseph, Joseph Bell Stove & Range Company, Muncie, Ind.
 Brand, Sebastian, Brand Stove Company, Milwaukee, Wis.
 Burt, N. H., Great Western Stove Company, Leavenworth, Kan.
 Bennett, H. W., Indianapolis Stove Company, Indianapolis, Ind.
 Bowditch, Edward, Rathbone, Sard & Co., Albany, N. Y.
 Boal, Stanhope, the Favorite Stove & Range Company, Piqua, Ohio.
 Brooke, L., Floyd, Wells & Co., Royersford, Pa.
 Cribben, Henry, Cribben, Sexton & Co., Chicago.
 Culter, R. A., Culter & Proctor Stove Company, Peoria, Ill.
 Castle, C. H., Comstock-Castle Stove Company, Quincy, Ill.
 Dana, Geo. D., Excelsior Mfg. Company, St. Louis.
 Du Charmé, C. A., the Michigan Stove Company, Detroit, Mich.
 Dugdale, Joseph T., Western Stove Mfg. Company, St. Louis.
 Dwyer, J., Peninsular Stove Company, Detroit, Mich.
 Duffy, James, Duffy-Trowbridge Stove Mfg. Company, Hannibal, Mo.
 Emery, J. W., Channon Emery Stove Company, Quincy, Ill.
 Filley, Charles H., Excelsior Mfg. Company, St. Louis.
 Goldschmidt, Julius, Brand Stove Company, Milwaukee, Wis.
 Gardner, Fred. W., the Michigan Stove Company.
 Holland, Geo. H., Bridge & Beach Mfg. Company, St. Louis.
 Hawkins, Frederick, the Fuller-Warren Company, Milwaukee, Wis.
 Hunter, John E., Culter & Proctor Stove Company, Peoria, Ill.
 Huntington, C. C., H. Wetter Mfg. Company, Memphis, Tenn.
 Joseph, W. E., Patton Mfg. Company, Columbus, Ohio.
 Kernan, Francis, Syracuse Stove Works, Syracuse, N. Y.
 Kahn, Lezard, F. & L. Kahn & Bros., Hamilton, Ohio.

Lansing, J. A., Scranton Stove Works, Scranton, Pa.
 Leonard, J. J., the Toledo Stove Company, Toledo, Ohio.
 Lee, Fred. E., Estate of P. D. Beckwith, Dowagiac, Mich.
 Magee, Frank A., Magee Furnace Company, Boston.
 Moore, W. N., Joliet Stove Works, Joliet, Ill.
 Moore, Lewis, Joliet Stove Works, Joliet, Ill.
 McClure, J. H., Phillips & Buttorff Mfg. Company, Nashville, Tenn.
 Mixer, Frank, Rock Island Stove Company, Rock Island, Ill.
 McKnight, M. B., Mount Penn Stove Works, Reading, Pa.
 Moffatt, Albert, Collins & Burgie Company, Marengo, Ill.
 McAfee, D., Thomas White Stove Company, Quincy, Ill.
 Mitchell, George, Pittston Stove Company, Pittston, Pa.
 Moran, F. T., Peninsular Stove Company, Detroit, Mich.
 Overacker, Joseph P., O. K. Stove & Range Company, Louisville, Ky.
 Patton, A. G., Patton Mfg. Company, Columbus, Ohio.
 Prizer, Charles S., Orr, Painter & Co., Reading, Pa.
 Peck, E. W., Co-operative Foundry Company, Rochester, N. Y.
 Perry, Nathan B., Perry Stove Company, Albany, N. Y.
 Resor, I. B. Wm., Resor & Co., Cincinnati, Ohio.
 Raftery, Edmond, Rathbone, Sard & Co., Chicago.
 Renaolds, R. G., Richmond Stove Company, Richmond, Va.
 Sard, Grange, Rathbone, Sard & Co., Albany, N. Y.
 Sard, W. H., Rathbone, Sard & Co., Chicago.
 Seelye, W. G., S. S. Jewett & Co., Buffalo, N. Y.
 Stevenson, W. S., Thomas, Roberts, Stevenson Company, Philadelphia.
 Streeter, L. D., Corning Stove Company, Corning, N. Y.
 Shick, Robert P., Orr, Painter & Co., Reading, Pa.
 Shaw, Bartlett M., Walker & Pratt Mfg. Company, Boston.
 Sattler, Fred., Belleville Stove Works, Belleville, Ill.
 Thompson, George, Enterprise Stove Company, Vincennes, Ind.
 Trowbridge, C. H., Duffy Trowbridge Stove Mfg. Company, Hannibal, Mo.
 Terstegge, H., Terstegge, Gohmann & Co., Louisville, Ky.
 Van Cleave, J. W., Buck's Stove & Range Company, St. Louis.
 Veite, H. A., Fuller & Warren Company, Troy, N. Y., and The Fuller-Warren Company, Milwaukee, Wis.
 Venn, James A., Rathbone, Sard & Co., Aurora, Ill.
 Van Wormer, J. J., Van Wormer & Co., Albany, N. Y.
 Van Evers, De Witt, Brand Stove Company, Chicago.
 Wells, I. H., Collins & Burgie Company, Marengo, Ill.
 Whitehead, W. H., Chicago & Erie Stove Company, Erie, Pa.

Walker, Arthur W., Walker & Pratt Mfg. Company, Boston.
 Wilton, H. Leonard, Art Stove Company, Detroit, Mich.
 Wewers, Wm., Gem City Stove Mfg. Company, Quincy, Ill.
 Will, Fredk., Sill Stove Works, Rochester, N. Y.
 Rodgers, Spencer C., of Rodgers, Ruso & Kelly, stenographers, Albany, N. Y.

J. W. Van Cleave was elected secretary *pro tem*. The opening session was devoted to reports of officers. President Dana, in his report, touched upon a number of practical questions of much interest to the members, his opinions being received with many expressions of strong approval. The reports of the secretary and treasurer dealt with matters of routine. The following firms presented applications for memberships:

Corning Stove Company, Corning, N. Y.
 Sherrmaa S. Jewett & Co., Buffalo, N. Y.
 The Anshutz Bradberry Company, Pittsburgh, Pa.
 Walker & Pratt Mfg. Company, Boston, Mass.
 S. B. Sexton & Son, Baltimore, Md.
 A. Bradley & Co., Pittsburgh, Pa.
 Pittston Stove Company, Pittston, Pa.
 Collins & Burgie Company, Marengo, Ill.

WEDNESDAY AFTERNOON.

The members of the association were addressed on Wednesday afternoon by John B. Kirk of Chicago, vice-president for Illinois of the National Association of Manufacturers of the United States of America, who laid before them the claims of that association for the active support of all American manufacturers. Mr. Kirk's remarks were well received.

M. D. Talcott of Chicago made an application to the association for their indorsement of his credit bureau. The subject was referred to a committee.

An interesting discussion took place on the equalization of prices for molding in competing centers. This was followed by another discussion on the best methods of producing smooth surfaces on castings. The convention then adjourned to permit the room to be placed in order for the banquet in the evening. In former years the banquet was a feature of each annual gathering of the stove manufacturers, but for some time it has been discontinued. The enthusiasm with which the project has been received this year and the large attendance assured make it extremely probable that the annual banquet will again become a part of the proceedings of these conventions.

The Banquet.

The banquet on Wednesday evening was a grand success, and great credit is due to Fred. W. Gardner, who arranged the details and overlooked nothing that was likely to add to the enjoyment of those present. The tables were arranged in horseshoe form and decorated with flowers. A mandolin orchestra furnished delightful music during the dinner. At the head of the table sat President Dana of the National Association, President Cribben of the Defense Association, Past Presidents Sard and Barbour and other men of national prominence in stove councils. The total number present was 86, considerably surpassing expectations. The list included, in addition to the members previously named :

Rev. D. Carson.
M. J. Powers.
O. G. Thomas.
Charles A. Gilpin.
Joseph Leon Gobeille.
H. F. Frohman.
John A. Penton.
John Hill.
E. W. Abrams.
C. W. Sisson.
T. F. Hull.
George W. Cope.
J. K. Hanes.
J. Y. Whiting.
H. K. Spencer.
E. A. Ireland.
D. M. Ireland.
C. H. Matthews.
L. M. Dyer.
J. C. Fry.
K. Henry Gleason.
B. W. Dodson.
C. M. Helmar.
Daniel Stern.
C. T. Finn.
W. H. Dwyer.
T. J. Hogan.
E. C. Hanrhan.
T. S. Bowman.
F. C. McDonald.

The menu was tastefully printed on heavy beveled cardboard. After the cigars had been lit, President Dana rapped attention and paved the way for the *post prandial* exercises in a very neat speech, remarking incidentally that if any evidence was needed of an improvement in the stove trade it could certainly be found here. Grange Sard was called upon to respond to the toast "The National Association." He gave a brief history of the organization, which was founded in 1871, dwelt on the influence it had extended on the stove trade and recapitulated with pride the record of the past few years. Stove manufacturers can truly say that they have not ground the faces of the poor and cut down the wages of their men. The stove trade is unique in not having reduced the wages of employees. Manufacturers have paid 100 cents on the dollar and kept business in solvent condition, almost absolutely free from fail-

ures. All this has been done largely through the influence of the National Association.

Henry Cribben spoke to "The Defense Association." He outlined the policy of that organization and stated that its crowning glory is that through it means had been devised to avoid strikes and lockouts.

W. S. Stevenson responded to "The Best Girl of the National Association—the Pennsylvania Association."

W. H. Sard to "The Northwestern and Southwestern Associations."

Rev. Dr. Carson to "The Ethics of Business Life," in which he advised his hearers to make good goods, then get a good price worthy of the goods, and so always be able to give a good price to employees.

Fred. W. Gardner responded to "New Dress in Stoves."

Fred. E. Lee of Dowagiac to the toast, "Keeping Everlastingly At It."

Geo. H. Barbour to "The Mayor Detroit Might Have Had."

W. G. Seeley to "The Return of the Lost Sheep."

M. B. McKnight to "The Gospel of Pessimism."

Lizard Kahn to "A Good Thing—Push It Along."

C. S. Prizer to "Sunshine in the Stove Trade."

Henry Gleason to "Profit Sharing."

Geo. W. Cope to "Power of the Press."

Francis Kernan to "Tammany Hall."

A. C. Mott to "Bimetallism."

J. W. Van Cleave to "Whisky, Women and Hores."

August Brentano to "Literature of the Stove Trade."

Before parting a toast was drunk in silence to the memory of D. M. Thomas.

THURSDAY.

Thursday morning session was wholly given up to a discussion of cost sheets. It was opened by J. W. Van Cleave, who read an able paper on the subject, which was supplemented with illustrations on a blackboard. The members took very great interest in the matter, keeping up a running fire of questions, which were readily answered by Mr. Van Cleave.

The session on Thursday afternoon was devoted to miscellaneous business, largely of a routine character. The business prospects for '95 were thoroughly discussed from the standpoint of representatives of the several sections, and the general agreement was that they were quite promising.

The following officers were elected :

President, Lizard Kahn.

First vice-president, J. W. Van Cleave.

Second vice-president, Julius Goldschmidt.

Treasurer, W. S. Stevenson.

Secretary, T. J. Hogan.

Executive Committee—C. S. Prizer, George D. Dana, Francis Kernan, F. D. Magee, Fred. W. Gardner and C. C. Huntington.

The convention adjourned to meet in New York on the first Monday in May, 1896.

Meeting of the Defense Association.

The Stove Founders' National Defense Association held their annual convention in the Auditorium Hotel, Chicago, on Tuesday, April 30. It was well attended. Two sessions were held, one in the morning and the other in the afternoon, adjourning shortly after 5 o'clock.

Henry Cribben presided and E. W. Peck acted as secretary. Reports were presented from the several officers reviewing the occurrences of the past year. President Cribben's report was lengthy, covering the actual work done by the association. The relations between the manufacturers and their employees were shown to be harmonious, presaging another year free from labor troubles. Allusion was made to the less sustained by the association in the death of D. M. Thomas, the late secretary, and a committee consisting of Henry Cribben, Grange Sard, George H. Barbour, Lizard Kahn and E. W. Peck was appointed to co-operate with a like committee from the National Association of Stove Manufacturers in taking suitable action thereon. The affairs of the association are prosperous. Three more firms were admitted to membership at this meeting.

The election of officers resulted as follows:

Henry Cribben, president.
W. T. Bradberry, vice-president.
T. J. Hogan, secretary.
A. C. Mott, treasurer.

Committee for Second District:

Grange Sard,
C. S. Prizer,
D. G. Rennolds,
N. B. Perry,
E. W. Peck.

Committee for Third District:

Jeremiah Dwyer,
W. W. Baldwin,
James Dwyer,
I. B. Resor,
W. T. Bradberry.

Committee for Fourth District:

C. H. Castle,
N. H. Burt,
G. D. Dana,
J. W. Van Cleave,
J. Goldschmidt.

The first district, which comprises New England, has never been organized.

The preceding list shows that all the old officers have been re-elected, except in the case of the secretary. The association expressed their preference for T. J. Hogan to fill the vacancy caused by the death of Mr. Thomas. Mr. Hogan was the choice of practically the entire body, making him a formidable candidate for the secretaryship of the National Association of Stove Manufacturers. He will not be a new man in this position, having been secretary of both

organizations in 1890-91, when he discharged the duties devolving upon him very creditably. He will therefore enter upon the work well equipped to handle the important business connected with the office of secretary. Mr. Hogan was connected with the Bridge & Beach Mfg. Company of St. Louis after his retirement from the secretaryship and until the beginning of the present year, when he transferred his connection to the Perry Stove Company of Albany, N. Y. He will in all probability make his headquarters in Chicago. The association has made an excellent choice in recalling him to fill the position of secretary.

Trade Representation.

—THE IRELAND & MATTHEWS MFG. COMPANY of Detroit, Mich., were represented by both Messrs. Ireland and Matthews. They made an exceedingly fine display of urns and nickel plated steel rims. Prominent among the urns were ornate finished pieces with a great variety of trimmings. A stove manufacturer could here take his choice of a body in almost any color, finished in a dead plain or fluted surface and graced with arms of cast or wrought brass. The urns now being presented for the favor of the trade are finer than anything ever before manufactured, and yet they are sold at prices marvelously cheap. The nickel plated steel rims were shown in a number of patterns, from rims for ranges to circles for the tops of oak and other cylindrical stoves. They also showed beautiful statuettes, among them being reproductions in miniature of the famous Montana silver statue, shown at the World's Fair.

—THE MATTHEWS & WILLARD MFG. COMPANY of Waterbury, Conn., were represented by E. A. Ireland, who made a beautiful display of strikingly handsome urns. The finest were ornate urns with satin finish, made to endure heat without injury. The firm have engaged in the ornamental brass business, so that they are prepared to make the finest kind of goods in his line with the highest finish. Their urns are tastefully decorated with cast and wrought brass and copper arms in graceful designs.

—HENRY GLEASON, 106 Beckman street, New York, exhibited a small but exceedingly choice line of samples. In the matter of urns he has made a new departure, eschewing the filigree work of his competitors and adopting a style of decoration designed to harmonize with the usual decorations of a room. His urns are finished in oxidized silver, with various designs on the sides in *bas relief*. He also displayed a line of samples of gas stove cocks, air mixers, &c. Mr. Gleason is agent for the Simpson-Fry Mfg. Company of Brooklyn, N. Y., gas cocks and gas stove appliances; New Jersey Lamp & Bronze Works, New Brunswick, N. J., urns; Trent Tile Company, Trenton, N. J., tiles; Matthews Mfg. Company, Worcester, Mass., stove knobs, and New York Nickel Plating Company, New York. C. J. Fry of the Simpson-Fry Mfg. Company was also in attendance.

—W. E. FINN of the Troy Nickel Works, Troy, N. Y., was on the ground with a line of samples of the famous Alaska cold handle stove trimmings, which do not make as artistic a display as high art urns, but are nevertheless fully as attractive to manufacturers of stoves.

—THE S. OBERMAYER COMPANY of Cincinnati, Ohio, and Chicago, Ill., manufacturers of foundry facings and supplies, were represented by H. F. Frohman, Wm. N. Wilson and John Hill.

—SAMUEL SMYTH of Pittston, Pa., well known to the stove trade, was present and greeted his old friends.

—THE TRADE PRESS was of course well represented. *The Metal Worker* occupied its old headquarters on the sixth floor, near the entrance to the banquet hall, and was favored with a constant stream of visitors.

The Local Stove Trade.

The promise of better times in the stove business which the demand of January, February and March held out was not materially strengthened by the results for April, though there is no ground to lose hope. Sales during April were a trifle more than those of April last year, and probably would have been more in excess if the weather had not been so cool as to delay house cleaning and removals, which are responsible for the greater portion of the traffic at this season in the stove and housefurnishing goods business.

The tendency is certainly toward improvement in this and other lines, and though unfavorable conditions of weather serve to retard present business, still the increased number of callers and talk of prospective orders and possible contracts indicate future business improvement. There are numerous contracts and orders booked for the installation of ranges, furnaces and fire place heaters for individual house owners—a branch of the business that practically came to a standstill within a short time after the commencement of the panic of '93, and in which there has been but little done ever since till now, orders for such goods being confined almost entirely to the wants of builders. There is a noticeable increase in the demand for small ranges and small laundry stoves, such as the people in poor and medium circumstances purchase, indicating that there are fewer idle men.

A very gratifying sign which holds out much promise for the future of the stove business and augurs well for the return of prosperous times is the increased number of orders, through export commission men, for stoves for foreign countries, showing a healthier condition of business not only in this country but in many foreign countries in which the depression of trade was nearly as great as it was here. Collections continue slow, though this is probably to be expected where dealers require increased stocks and are obliged to wait on their customers for money to pay for larger quantities of goods than they have been recently in the habit of carrying.

Wm. McCullough.

Wm. McCullough, secretary of the Anshutz-Bradberry Company, at Pittsburgh, Pa., manufacturers of Tremont stoves and ranges, died at his residence in Allegheny on Saturday, the 27th ult. Mr. McCullough was born in Washington County, Pa., but went to Pittsburgh when a young man. For a number of years he was with the R. & W. Jenkinson Company, tobacco manufacturers, of Pittsburgh. Fifteen years ago he left that concern and entered the employ of the Anshutz-Bradberry Company. When the firm was incorporated four

years ago he was elected secretary, and he occupied that position at the time of his death.

George W. Swett.

George W. Swett, one of the most prominent of the stove manufacturers of Troy, N. Y., died at Albany on the night of April 21. He was ill more than two weeks, having been taken sick while in the capital city. The report of his death was received in Troy with the greatest surprise, as none except his nearest relatives had known that he was ill.

Mr. Swett was about 76 years of age and had been for 43 years actively engaged in the iron foundry and stove business at Troy. He was born in Essex, N. Y., and removed to Troy when a young man. In 1852, with J. F. Quimby and Harlow Bennett, he embarked in the manufacture of stoves under the firm name of Swett, Quimby & Co., in the plant now known as the Empire Stove Works. The firm prospered and were succeeded in 1867 by Swett, Quimby & Perry. Mr. Bennett retiring and his place in the partnership being taken by Samuel Perry. The death of the latter occurred in the year 1883 and Mr. Quimby died in the year 1886, when the name of the firm was changed to George W. Swett & Co. Mr. Swett at that time associated with him Frederick A. Swett.

Mr. Swett was twice married. His second wife, by whom he had two sons, Alfred and Charles, died in 1893. By his first wife he had one son, George B. Swett of Chelsea, Mass., who is manager of the Swett Car Wheel & Foundry Company of that place. Mr. Swett was active in Masonic circles, at the time of his death being identified with King Solomon's Primitive Lodge. He was also a member of the Troy Yacht Club and several other organizations.

Plating Stove Ornaments.

BY THE HANSON & VAN WINKLE COMPANY.

For several years the ornamentation on stoves has been steadily increasing, not necessarily in quantity, but rather in quality or artistic effects, and manufacturers are forced to constantly change or improve designs on trimmings to be plated. To bring out all the minute lines or figures requires more skill and care on the part of the molders than on patterns for other parts of stoves, as they have learned from past experience that castings must be clean and free from hard burnt spots and all sand removed, otherwise the plating will be of irregular color and without nickel where traces of sand remain.

Only the best quality of facing sand should be used for this purpose, but no amount of care will entirely remove all the causes of defects; consequently other means must be employed. As far as possible pickling should be avoided, as it is often detrimental to good plating, but it is sometimes necessary. In the writer's experience the Acme chemical solution is the least injurious, and if instructions are carefully followed will remove all silica matter, leaving the iron perfectly clean. The work should then be thoroughly rinsed in cold water and then dried off in hot water. As an extra precaution against bad effects of acids it would be well to neutralize the acid with some alkali solution. All castings should be well scratch brushed before going to the polishers, as this gives the background

a better luster and at the same time removes any loose sand that may cling to the casting after being tumbled.

Polishing.

The first process in polishing is termed "roughing out." Various wheels are used for this operation—wood wheels covered with leather, canvas wheels, or bull neck wheels. The wheels to be used will depend on the surface of the work to be polished. The wheels are "set up" with emery Nos. 60 to 90, depending on the condition of the castings. The wheel is first coated with glue and rolled in emery until a heavy coat adheres to it; it is then laid aside in a warm place to dry, after which it should be perfectly balanced before putting it on the spindle of the lathe.

The next operation is called "second roughing" or "finishing down," and is similar to the first operation except that a separate set of wheels are required, which are usually "set up" with emery running from No. 90 to 120. The grade of emery used in this operation will depend on the grade used in "roughing out." The next operation is termed "greasing" and is nearly always done on bull neck or felt wheels, although the leather covered wood wheels can be used for this operation when the surface is large and flat. Felt or bull neck wheels are soft and will readily adjust themselves to the curves of the castings. The wheels should be "set up" with emery from No. 120 to 180 and, after drying and balancing as before, they should be used for a few minutes to take off the sharp cutting points of the emery. Then take a piece of tallow, beeswax or other greasy substance and run it over the face of the wheel until you get an oily surface. Should the wheel become too smooth and not cut fast enough lump pumice or emery cake should be applied to liven it up and clean out gummed grease.

The last operation in polishing is called "coloring" and is done on wheels similar to those used in "greasing," except that the wheel receives very little grease and is then polished or glazed by running a hard flint stone over its face. The wheel should be worked down until its use on the castings produces a very high polish; this is the most careful operation of all if good work is desired, as the higher the glaze on the wheel the better will be the color on the work after plating. In each of these operations the polisher should be careful to remove all traces of scratches left by the preceding wheel, otherwise valuable time is lost in correcting the work of an incompetent polisher.

Plating.

The plating room should always adjoin the polishing department, but they should invariably be separated by partitions, as the dirt or emery dust from the polishing process is detrimental to good plating. It is perhaps unnecessary to say that the plating room should be well lighted and so arranged that everything can be kept as clean as possible. Nickel plating is not in itself difficult, but the solution is extremely sensitive and a very small quantity of foreign matter embodied in the solution (usually through uncleanness) will often cause endless trouble.

The hot and cold water tanks, also the lye kettle and scrubbing sinks, should be placed so that the plater can work the various operations in succession without retracing any steps. The tanks for solution should be made from

white pine or cypress and carefully lined with Trinidad refined asphaltum. Before this asphaltum "sets" go over it with a hot smooth iron to take out any air bubbles, then sprinkle liberally with clean dry sand.

The nickel solution can be made from carbonate or chlorides, but the double sulphate of nickel and ammonia (commonly called nickel salts) solution is the simplest and most convenient. The salts should be dissolved in a clean earthenware jar with a steam pipe, or else in some wooden vessel that has never been used for any other purpose. In dissolving this use nothing but nickel salts and clean water. If water is not clean your solution will not plate white. If steam jet is used for this it would be well to let steam blow through the pipe for a few minutes so that all grease, rust or other foreign matter is expelled before using on salts. Nickel solution when ready for use should stand from 6½ to 7° Baume hydrometer. This will require from 12 to 14 ounces of salts for each gallon of water. Should the solution be too strong and crystallize add a little warm water occasionally until it stops. Keep an even temperature of 60° to 65° in the plating room if possible, especially in winter.

Stove work and all iron castings of large surface require an excess of anode surface, and it is economical to hang in as many anodes as possible on each side, and they should be from 18 to 24 inches deep. The dynamo current is also of great importance; you want plenty of it, and in selecting a dynamo this point should be considered above all others. There are several good machines to select from, others that are a source of constant trouble.

After work leaves the polisher's hands it is taken to the plating room and wired up with fine copper wire, then suspended in the lye kettle; this is a strong hot solution of lye. The work should remain in this solution for five or ten minutes in order to cut all the grease or dirt left by the polishing wheels and in handling; the work is then immersed a few seconds in a dilute muriatic acid dip (about 1 part of acid to 6 of water). It should then be dipped in clean cold water, next scrubbed well with powdered pumice stone, then rinsed again in clear cold water, when it is ready for the plating tank. Until a plater becomes accustomed to the work, he should examine each piece carefully before hanging it in the nickel solution to see that all grease or dirt has been removed. This can be determined by observing the action of the water on the work. If the water adheres all over after dipping, it is clean, but should spots appear where water does not run, then the scrubbing operation must be repeated. After this operation the work should be taken immediately to the nickel tank and suspended from the rods on the tank. As a plating current is not intense, all rods and connections must be kept bright and clean in order to get a perfect contact. A strong current can be used on work when first placed in the tank, and if too intense can be reduced through the rheostat after the work is well "struck up." If the work burns on the edges there is too much current, and it must be reduced until there is no further tendency to burn. If two or more tanks are used a separate rheostat should be attached to each tank. Work being plated is left hanging in the solution from 20 to 25 minutes, depending on the current, strength of solution, anode, surface, and quantity of work in the tank. A little experience will soon determine

the length of time required to give the best results.

After the work is plated it is rinsed off in clean cold water, then hung in boiling hot water until thoroughly heated. It is then removed and swung in the air by the operator until all moisture has disappeared. It is very important that this hot water be clean, as otherwise the work will be stained.

The next and last operation is "buffing" in order to give the article a luster, as all nickel work on iron comes from the tanks a dull white. For plain surfaces the buffing is done with a loose cotton or muslin wheel, on which is applied crocus composition or nickel rouge. For name plates or other parts having backgrounds which must be left a dead white, and on which only the raised parts are to be buffed, a felt wheel should always be used, on which should be applied a Vienna lime composition. If in this operation the buffs or wheel leave any dirt or grease, the work should be again washed in a lye solution, rinsed in cold water and dried with the hot water, the same as described above.

A Furnace Text-Book.

Under the title of "Heating and Ventilation," the Craig-Reynolds Foundry Company of Dayton, Ohio, are issuing what they term an "Everyday Treatise on the Principles of Ventilation, with Facts and Figures." The book is written by George T. Hoffman, a member of the American Society of Heating and Ventilating Engineers and manager of the Western branch of the house, at 82 Lake street, Chicago. The preface states that when the writer first entered the heating business one of the great drawbacks was the almost entire absence of any accurate data on which to base the calculations necessary for an intelligent adjustment of the sizes of pipes, registers, radiators, &c., to equally warm and ventilate different rooms in a given building. It states that the mass of scientific literature is of very little assistance to the average engineer, and that the treatise is issued with the idea of meeting this lack of simple rules and data. The book, which is said to be published in the interests of the trade, is of more than ordinary value. Each of the subjects treated is handled simply and conclusively, and the rules laid down are of such a positive nature as to give a basis for the judgment which it is said must be used in the application of all rules of heating. This feature of these rules will make them more highly valued by those for whom the book is compiled than the elaborate formulas affected by some engineers in their calculations. The topics discussed are furnace heating, combination heating, determining the proportion of radiating surface, ventilation, relation of moisture to heat, determining the efficiency of a warm air heating apparatus, suggestions for hot water piping, hot water heating, and estimates and adjustments. The book also contains simple estimate forms such as are used in connection with the Triumph warm air furnace and combination heating plants. Two pages are devoted to special information about the Triumph line of heaters. A number of tables are included, giving data of value to the heating engineer. The book contains an engraving showing the main office and works of the company, at Dayton, and of the Western branch. It also shows on one page a half-tone engraving of the different styles of Triumph furnaces.

More East Side Chat.

BY JEREM.

Many of the East side stove dealers are pretty hard to get along with both in buying and selling, although some are very prompt and agreeable to do business with. But before they get posted the salesmen used to have pretty tough work to make sales. The New York manufacturers used to have a variety of discounts from their list prices, ranging from 5 to 50 per cent. off, with an additional cash discount according to circumstances. Usually the latter was not deducted until the account was settled. As these people were constantly niggling on terms and prices not much compunction was used in cutting off the 5 per cent. and the rows and rumpuses about "ber cents" and selling goods to these people were numerous. When they first began to go to business two or three would go around the market together pricing stoves and the big percentage used to catch them. "Vot! you don't gif 10 ber cents off only; ve ged fifty ber cents; you take fifty ber cents we make a bargain vid you." But no matter what the bargain came to the jaw was tremendous to reach it. Then they got to figuring so many stoves for so much money, and when the salesman had figured it all up, with all the discount for spot cash and they got the net amount, they would coolly ask, "Vell, how much goes off for der cash money?" "For heaven's sake what do you take me for?" says the aroused salesman. "You got me to figure this all up, there are all the discounts off and now you want to know how much is off."

"Vell, dey tooked ber cents for cash next door, and off you didn't ve buy dere."

Then the salesman, fearing he will lose the cash customer, begins to haggle, and about the size of it is that the Skinnowskies get the goods. They soon got on to the book racket and learned to hang on to the "cash money." They would get the spot cash bill made up, and if it was for \$100 they would offer "fifty down and vill pay you in thirty days." Of course, the jaw would begin again, and after the saintly salesman had cursed them and called them everything, they would tell him: "Vell, if you doud vont to make pizness ve ged him down de street; de machent been by our store and say he trust so long what we like," and negotiating begins again, and rather than let people down the street sell them the salesman thinks he will copper the \$50 and chance them 30 days for the remainder; so he agrees to the bargain. After more talk and when he thinks it is settled, Levi says: "Vell, how much ber cents goes off now?" This last remark paralyzes all the virtue and sabbath training that the salesman ever had; he breaks out in a strain of profanity that would annihilate any other race of people, but this crowd takes it coolly and chew the stinkadoras that the good hearted salesman provided them with and prepare to leave. They wander all around every store and go through the same performance all over the street.

Now that many of them are established in the trade their peculiarities are well known, and every concern gets a hack at some mighty tough customers; though they may be financially responsible, yet the bother and trouble in settling up accounts is so vexatious that they get fired out of one house only to get into another, and the same performance is gone over.

This old fellow whose portrait heads

this article is one of the terrors. He is good for what he buys, but it is impossible to get settlements without a fight. Many of these people go down town Saturdays to transact business, as they have on their synagogue clothes; but they do not always carry their synagogue teachings with them, any more than many of their Christian brothers. But the pertinacity of one of the former going for his "ber cents" is equal to a fight to the finish.

This last concern who had Kroski wore themselves out and finally brought him up with a round turn. So he came down one day to square himself. It must be said that politeness in manner



More East Side Chat.—Vot! Der per cents doud go off? Mine Cote I'm Ruint!

is not lacking in these people, so he greeted the bookkeeper pleasantly and said:

"I come down to find out how much I own you."

"Time you did," jerked out the bookkeeper; "if you hadn't we would have had the sheriff in your place tomorrow morning. Sure."

"Vot! Would you sue me? Aind I good enough?"

"I don't care how good you are. I want that money. That's all."

"I doud own you much."

"I don't give a d— how much it is, I want the money. Give me \$32.18 and get out of here."

"Vot!" shrieked Kroski, "dirty dwo tollars. I doud own half that."

"You lie, you do; shell out now," Kroski nearly got crazy with excitement. "How you make dat? You got credits with shorts and der stove vot I sent back."

"Yes, I gave you credit for them, and you lied like the devil about it."

"Me lie! Me lie! I never told a lie in my life."

"Well, you lied about that stove, anyway," and here was another war of words.

Then the boss pitched in and the porter was called up, and a first-class jaw was in progress. Finally the boss said: "You will pay every cent of that account or I will sue you."

Suddenly an idea struck Kroski.

"Did you doud der ber cents off?"

"Took the per cent. off? Not much! Suppose we are going to wait a year for you to pay up and take off discount! Now give me the money and get out. I got you fast. You ain't got any more bills out of me, and every bill you have says you have got to pay in 30 days to get the percentage. Hurry up; I ain't going to stand here all day fooling with you."

"Vot! der ber cents don't go off! Mine Cote, I'm ruint!"

And away went Kroski in a fit of excitement and rage that would lead one to think he was being murdered. But it was no use; the boss was bound he should pay, and he made him fork over every cent, and the tears rolled down his cheek at the idea of being robbed of "der ber cent." He went out of the store and swore "he never buy a dimed cent dere. If you give him to me I wouldn't tooked dem."

About an hour afterward he came back and said to the bookkeeper: "Sent me two 7 and one 8 Blue Light."

"Where's your money," asked the bookkeeper.

"Vot! Aind I good enough? I doud own you anything, do I?"

"No! Nor you won't. so shell out."

"Vell send me up C O D."

"No, sir. Money down."

"Vot! You fraud."

"Now you put up or get out. I have had enough of you; don't want to sell you for cash! You hear."

"Vot! You doud want to make pizness for cash money. Mine Cote, vot a fool you is," shrieked Kroski, horrified at the idea.

"Now see here, get out; you can't have them anyway."

"Vell here is five tollars. I paid der rest ven he gida up."

"You put down all that money or I will fire you out."

So Kroski reluctantly counted out the amount, squealed for something off for cash money and drove the bookkeeper to madness. Then when he got his receipt he asked him for a cigar, and he got it.

After lighting it he coolly pulled out a wad of bills and triumphantly told the bookkeeper he "didn't give a dime cend if any one trust him. I got der cash money and I pay if I want to," and he strutted out as proud and as happy as a peacock. The chances are dollars to doughnuts that he will get on that concern's books again before the year is over and they will go through the same scrap.

THE CLEVELAND FOUNDRY COMPANY of Cleveland, Ohio, have recently added a new line of low priced hot plates to their already extensive assortment of these goods. Their entire line of Puritan gas cook stoves or hot plates is shown in a special 16-page catalogue which they have just issued and which they will mail to any dealer on application. They are also extending their line of warm air registers by adding new sizes and styles and are prepared to fill orders for these goods promptly.

ODD PLATES.

THE ENTERPRISE FOUNDRY COMPANY, Rochester, N. Y., favor us with their illustrated catalogue and price list. It is a neat publication, bound in paper, with a gilt title. The goods made with this concern include hot air registers and ventilators, border frames, &c., plumbers' goods and hardware specialties. A very great variety of register designs are shown in the opening pages and a fine effect is given by printing several of the designs in gold, silver and bronze, showing the actual appearance of these finishes. Some information is given on the setting of floor registers and a table of dimensions of registers, ventilators, &c. The plumbing and hardware specialties are included in the latter part of the book and cover a number of articles of interest to our readers. Sinks, traps, ventilating caps, boiler stands and brackets are some of the goods referred to. The last section is devoted to iron lugs, jacks, &c.

THE SELECT ESTATE is the name of a high grade gas range which is being put on the market by F. & L. Kahn, Hamilton, Ohio. The edges of the top have a knife sharpening device, and the oven door is provided with an oven thermometer. The range is handsome in design, and is embellished with nickel. It has a large oven with broiling space beneath. The range can be furnished with a water heating device when desired, for connection with the ordinary kitchen boiler.

THE GORBELLE PATTERNS COMPANY of Cleveland, Ohio, sent out during the past week a very neat announcement to the effect that Mr. Gorbelle would be at the Auditorium Hotel, Chicago, from April 30 to May 3, inclusive, where he could be consulted by stove manufacturers with regard to changes in and additions to their stock of patterns. The announcement was printed on white china silk, which in turn was mounted upon a piece of heavy cardboard ornamented with a border in old gold. The make up was unique and entirely in keeping with the announcements usually issued by this enterprising concern.

W. KINNEY of the Ohio Stove Company, Portsmouth, Ohio, favored the Cincinnati office of *The Metal Worker* with a pleasant call recently. Mr. Kinney reports a satisfactory demand for the goods produced by his company and prospects for fall business bright.

THE BONNET & NANCE STOVE COMPANY of Quincy, Ill., closed their works last week for the purpose of putting in a new boiler and making other improvements. As soon as the work is completed the plant will resume operations.

WE HAVE BEFORE US a 24-page pamphlet constituting a directory of the furnaces manufactured by the Fuller & Warren Company of Troy, N. Y., and sold in Cleveland, Ohio, by Holmes & Hickox of 308 Prospect street, that city. The opening pages illustrate the Fuller & Warren Company's Guaranteed furnaces, made both in portable form and adapted for brick work, while the bulk of the pamphlet contains testimonial letters, together with a partial list of names of the people in Cleveland who are using the company's heaters.

THE SURPRISE GAS CONVERTER is the name of a device which is being offered the trade by McCahan & Co., 8

North Central avenue, Baltimore, Md. The device is intended to be placed in the fire box of a stove or range and use ordinary illuminating gas as a fuel. The single converter has two burning nozzles, and is claimed to be of such capacity that with the device any cooking can be done which an ordinary three-hole gas stove will do. Sad irons can be heated, and by using a sheet iron oven on top of the stove baking can be readily accomplished. Another advantage claimed for the Surprise Gas Converter is that the stove can be quickly cooled after cooking is completed by removing the lids to the boiler holes. With each device is furnished a key for turning the stop in the center, one end of the key being suitable for use as a stove lifter.

THE DIGHTON FURNACE COMPANY of North Dighton, Mass., recently made a shipment of a carload of stoves to California by rather a roundabout route. They went from North Dighton to New York by railroad, thence to Aspinwall on sailing vessel, across the Isthmus to Panama, and from there to San Francisco on another sailing vessel.

THE CLEVELAND STEEL RANGE COMPANY of Cleveland, Ohio, were granted a permit last week for the erection of a three story brick structure on the northwest corner of Detroit and State streets. The main building, which will be used for the manufacture of steel ranges, will be 44 x 166 feet in size, while the office building will cover an area of 19 x 54 feet. It is stated that \$5000 will be the cost of the structure.

LEWIS & WANNER have begun the manufacture of steel ranges at 69 and 71 West Jackson street, Chicago, Ill., and have adopted the name Peerless for their line. They propose to confine their attention exclusively to this one line of domestic steel ranges, and announce their determination to make every one right. The Peerless line is furnished in 12 styles, guaranteed to burn any kind of fuel. The key plates, centers and covers have 1-inch rib to prevent warping. The main top plate is made in four sections. The fire box has rounded corners. Grates are flat draw center, double action or duplex. They can be removed through the grate door without disturbing the linings or water front. The oven is ventilated and the door is poised on two tempered protected steel springs. Asbestos lining is used on top and front oven plate, back and bottom flues and around the fire box, forcing the heat in the oven, equalizing the oven heat and protecting japanned surfaces. The combined coal and wood door is a novel feature. All the ranges are handsomely decorated with nickel, but are offered at a reasonable price.

HARVEY, DU BARRY & Co. are a new firm in the steam, hot water and hot air heating business at 152 West Twenty-third street, New York. They will make a specialty of the Peninsular furnaces and ranges and of the Jewel gas and gasoline stoves. They will run a line of steel ranges.

A RECENT ISSUE of the *Leeds Sun* is authority for the statement that the Leeds Stove Foundry & Casting Works is to be the name of the concern lately organized for the purpose of manufacturing stoves and castings at Leeds, Iowa. A. E. Stevens of Leeds will conduct the business, and has rented a building on East Floyd avenue for the purpose. The company have purchased a considerable amount of the stove cast-

ings of the works formerly operated by Mr. Paris, and will commence operations at once. The statement is made that the company have over 100 stoves already ordered, and expect to do an extensive business in the styles adapted for kitchen and laundry use.

NOYES & GODDARD of Waterville, Maine, have been meeting with a good demand for their specialties, and notwithstanding the hard times the volume of business last year is said to have been up to the average.

THE ANSHUTZ-BRADBERRY STOVE COMPANY of Pittsburgh, Pa., by means of a four-page folder which they have just issued, call the attention of the trade to the Tremont steel jointless soot, smoke and gas consuming furnace. The pamphlet is printed in colors, and shows the appearance of the furnace when set in brick work. This heater is referred to as having all seams tightly riveted, sectional hollow air lined straight sided fire bowl, any section of which can be removed or replaced through the fire door at the end; duplex revolving and rocking sectional grate, large ash pit and other features of novelty. The furnace is made in six sizes. The company issue a little pamphlet entitled "Pleasant Homes," which tells all about this furnace and gives testimonial letters and references.

THE MOLDERS of Troy, N. Y., were delighted with the starting on April 30 of the large stove foundry of Burdett, Smith & Co. in that city. The foundry had been closed for a long period, but while it has not been busy in making stoves, a number of needed repairs have been completed. The stock of stoves in the warehouses has been completely exhausted and the company have already on hand a large number of orders waiting to be filled. The prospect for a busy season is excellent.

THE NOVELTY GAS & OIL STOVE COMPANY, 25 East Fourteenth street, New York, are making a display of a number of high grade gas ranges, among which are the New Era gas range, made by the New Era Gas Appliance Company, Chicago; the Select Estate, made by F. & L. Kahn, Hamilton, Ohio, and the M. & D. range, made by the Mason & Davis Company, Chicago. This range represents the steel construction, and has a number of special features. A broiling oven is located where ordinarily a high hot closet is found. The burner under the oven is made to swing and is attached to the lighting door, so that when the door is opened the burner is brought outside the stove so that it can be readily lighted. It has the regular baking oven and cooking holes on the top, and can be furnished with a coil for heating water in connection with a kitchen boiler. They are also showing the Stewart water heater, which is designed for use in connection with the ordinary range boiler. Another of their attractions is a clothes dryer for use with a laundry stove.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., favor us with a circular illustrating and describing a new furnace known as the Peninsular and which is fitted with triplicate heating surface radiator. It is especially designed for heating cottages, small houses and apartments in which previous provision has not been made for a warm air heating apparatus. In view of this the furnace is built low in height, so that the radiating surface and air space are brought in close contact with the fire, and so arranged as to give

three separate fire surfaces on the radiator. It is provided with the company's patent duplex grate and annular shaking ring, has a feed door opening 12 x 12 inches, heavy double fire pot, deep ash pit, extra heavy castings and is adapted to all fuels. The construction is such as to give great heating capacity, the largest size, it is stated, having a heating capacity of 36,000 cubic feet. This size is only 63 inches in height with casing, and allows of an air chamber 14 inches high on top of the radiator, from which may be used 12-inch heating pipes.

A. WEISKITTEL & SON of Baltimore, Md., have just made a number of improvements in their plant whereby their manufacturing facilities have been considerably increased. They have purchased four adjoining structures, which has given them additional space of about 75 x 150 feet, on which they have erected a two story building. A portion of the ground floor will be used as a brass foundry, this giving the firm additional room in the iron foundry. It will also increase the nickel plating facilities to double the former capacity. The changes will also give room for about 20 additional mounters, so that the increase in the working force of the plant will be about 35, making the total number employed over 300. The firm have also added many new labor saving machines to nearly every department of the works, the brass finishing department receiving six new lathes. Weiskittel & Son state that the additions and improvements which they have completed will double their facilities and place them in a position to more satisfactorily meet the wants of their constantly increasing trade.

ONE OF THE INTERESTING EVENTS in Detroit last week was a horse show, which competent judges declared to be superior in many ways to any ever held in the country. The feature in which the members of the stove trade will be particularly interested is the fact that the three horse team of the Peninsular Stove Company carried off highest honors in this class and was awarded the blue ribbon of the meeting. As the company very tersely put it, "all of which goes to show that the good qualities possessed by Peninsular stoves have the very natural tendency of placing the Peninsular Stove Company's horses where their stoves are always to be found—superior to all others."

THE PECK WILLIAMSON HEATING & VENTILATING COMPANY, with main office and factory in Cincinnati, Ohio, have issued an enlarged edition of catalogue B, reference to which was made in these columns a few weeks ago. The publication is entitled "Voices of Experience from Warm Homes," and consists for the most part of testimonial letters from some of those who have used the company's heaters. There are also numerous illustrations made directly from photographs of buildings in which the company have placed their heating apparatus. The latter portion of the catalogue contains, in addition to these photo reproductions, many illustrations of various forms of the company's heating apparatus. The catalogue is exceedingly neat in its make up and the illustrations throughout are of a high order of merit.

THE KEELEY STOVE COMPANY, Columbia, Pa., are introducing the Columbian Syph, a new direct draft single heating stove in four sizes, with triplex or center draw grate, dust flue

attachment and nickeled trimmings. The center parts and the magazine may be lifted out at the top without removing bolt or screw. They are also introducing the Columbian Era, a new straight draft double heater in three sizes—a handsome low priced stove, nicely nickeled and with or without canopy top; the Columbian Pride, an air-tight double or single heater, having a hot air cap to complete it for a single heater, also having the cast cylinder and grate so adjusted that all dead matter is easily freed from the cylinder without dust. Ironstone or cast linings are provided as may be required for bituminous or anthracite coal. The stove is full nickeled and is introduced as an air tight hot air stove, not self feeding. Another new heating stove is a style of their Columbian Sun sheet iron stove in two sizes, having a double top and nickel foot rails, name plate and spun urn. They are also augmenting their line of Columbian Tropic single heating stoves by the addition of two larger sizes. Some changes are being made in their line of furnaces. The Columbian Banner furnace has a new drop ash door, and the line of Columbian Vulcan furnaces will be made on the double drum construction plan. The latter furnaces will also be made in styles having cast cylinders for anthracite coal and clay linings for bituminous coal. The styles made on the crab construction plan will be made without change.

THE BLACKMORE HEATING SUPPLY COMPANY, New York, representatives of the Craig-Reynolds Foundry Company, Dayton, Ohio, are settled in their new office and showrooms at 99 Beekman street. At one side of the sample room is a No. 323 Steel Triumph, 420 Air Blast Triumph and 440 King Triumph, complete in their galvanized casings. On the opposite side of the store one size larger of each of these heaters is shown without the galvanized casing. All the furnaces have fire pots with the extended pin surface. The Steel Triumph has a steel annular drum surrounding the center fire dome, through which the products of combustion pass before they are discharged. The Air Blast Triumph has an extended upper dome, with outlets to an annular radiator which is below it and partly surrounding the fire pot. It also has a device by which jets of air are thrown into the combustion chamber at the surface of the fire, to promote combustion with hard coal and to insure successful combustion when soft coal is used. The King Triumph is of cast iron, one section resting on the fire pot containing a dome, with a series of outlets into which fit an upper circular smoke radiator, by which a large heating surface is exposed. The large plate glass windows at the front of the store will be used for displaying a line of Ornate radiators, made by the United States Radiator Company of Saltsburg, Pa., who have placed their New York agency with the company.

THE QUICK MEAL STOVE COMPANY, St. Louis, advise us that their business for the month of April shows an increase over the corresponding month of last year of over 30 per cent. Their gas stove business is also steadily increasing. Their Quick Comfort line of refrigerators which they placed on the market this season is meeting with a favorable reception at the hands of the trade.

EVANS & CO., 119 Beekman street, New York, are rearranging their sample rooms. They make a specialty

of the Rival ranges and the line of stoves made by the Lebanon Stove Works and of the Gold Coin goods made by the Bussey McLeod Stove Company. They are making an elaborate display of the line of Gold Coin oil stoves. These stoves have a cast iron oil tank cast in one piece. They are also showing the Model oil stove, made by E. Bement & Sons, and a large line of refrigerators.

JAMES & KIRTLAND are now occupying the entire building, which is six stories high, at 110, 112, 114 and 116 Beekman street, New York. They will now use the entire first floor, which has six plate glass show windows, as a sample room, the second floor being fitted as offices. One of the new lines which they have added to their assortment is the New Process gas ranges. In a portion of their showroom will be displayed a line of Capitol, Hecla and Mascot steam and hot water heaters, made by the United States Heater Company of Detroit, in charge of W. S. Newkirk, who is their New York representative.

THE CLEVELAND FOUNDRY COMPANY, 107 Beekman street, New York, are using 291 Pearl street as a warehouse for their line of Puritan gas and oil cooking appliances. The removal of the stock from their old warehouse is an opportunity for a display of the executive ability of Shipping Clerk Louis Fitzmaier.

I. N. TRATCHER has moved around the corner from his old stand and is now prepared to fill orders for stoves and stove repairs at 115 Beekman street, New York. One side of his sample room is occupied by Senator ranges, made by Rathbone, Sard & Co. J. D. Marvin, their New York representative, has his headquarters here and displays conspicuously one of their new Snap ranges.

THE STOVE MANUFACTURERS' REPAIR ASSOCIATION are moving across the street from their old stand, and are preparing to ship orders for stove repairs and furnishings from 230 Water street, New York.

EVANS & CO., 119 Beekman street, New York, have recently made a large shipment of Gold Coin oil stoves to Lima, Peru.

H. W. HUNTER, representing F. & L. Kahn & Bros., Hamilton, Ohio, has been in the city for about ten days exhibiting a new range at the store of the Novelty Gas & Oil Stove Company in Fourteenth street. Mr. Hunter reports that he has had a very satisfactory trade on his constructions for gas fuel and the company have all they can do to fill orders.

THE LEBANON STOVE WORKS, Lebanon, Pa., are introducing the Princess, a new six-hole range with right hand oven and end hearth, and having a device for heating an upper room. They are also attaching a reservoir to their Banner range and are making other changes in their line in readiness for the coming season.

L. M. ARMOR, manager of the sales department of the Anshutz-Bradberry Company, Pittsburgh, Pa., will have the sympathy of his many friends in the trade in the death of his wife, which occurred on Sunday, April 28, at 4 p.m.

The commencement exercises of the evening education classes of the Young Men's Institute, 222-224 Bowery, New

York, closing the ninth year's work of the institution, were held in the Institute Hall on Thursday evening, May 2, when certificates and prizes were awarded to 65 young men for proficiency in arithmetic, bookkeeping, stenography and typewriting, freehand, mechanical and architectural drawing, carriage drafting, steam engineering, practical electricity, plumbing, &c. The programme of exercises included the rendering of vocal and instrumental music, addresses by various persons interested in the educational work of the Institute, and the formal presentation of the prizes and diplomas. The young man standing highest in each class received, as a prize, a book or a fountain pen, except in the class for architectural drawing, the prize for which was a scholarship in the Art Students' League of New York City. These educational classes have proved highly successful in their operation. Four hundred and sixty-three young men attended the evening classes during the past season, as compared with 425 in the previous season. The next session will be opened October 1, 1895.

Trade Notes.

THE LITTLE ROCK (ARK) WIRE WORKS have been organized, with \$10,000 capital.

THE STANDARD FIBER WARE COMPANY, Mankato, Minn., manufacturers of plain and decorated Household Utensils, advise us that in order to meet the growing volume of business they are now making some considerable alterations to their plant, including a new water proofing plant of a special character. The company have recently received many gratifying testimonials on the improvements they have made in their goods.

THE PHILADELPHIA WHITE BRONZE MONUMENT COMPANY, Pa., issue an oblong pamphlet calling attention to the White Bronze as a substitute for stone, marble and other mortuary material.

THE PROPERTY of the Bertha Zinc & Mineral Company at Pulaski, Va., has been sold and will hereafter be known as the Bertha Mineral Company of New Jersey.

THE KOKOMO BRASS FOUNDRY, Kokomo, Ind., has been sold to Chicago capitalists, who, it is said, will double the capacity of the plant.

THE LARGE FACTORY of the American Stamping Company, 108 North Third street, Brooklyn, manufacturers of Stamped, Japanned and Pieced Tinware and Galvanized Ironware, is now running with a good volume of orders, especially in the line of seasonable goods, such as Cokers, Water Cans, Watering Pots, &c. The tinning department of the concern has been shut down since the reduction of duty on the plates and will probably not be restarted. The American Stamping Company's New York office is at 104-106 John street.

IN THEIR ANNOUNCEMENT elsewhere in this issue Meuter Brothers & Co., Brooklyn, N. Y., call the attention of roofers to their brand of Iron Roofing Tin, each sheet of which is stamped. They describe this plate to be the same as that made 50 years ago, not only in the coating, but of genuine charcoal iron.

J. M. & L. A. OSBORN, Cleveland, Ohio, call attention in their announcement this week to a 10 foot corrugated

and plain round Conductor, lap and slip joint galvanized Gutter; also Mitters, Hangers and other fittings.

THE GENEVA TIN WORKS COMPANY of Elmira, N. Y., have been organized with the following officers: T. C. Maxwell, president; S. H. Hammond, vice-president; directors, O. J. C. Ræe, W. G. Dove, S. H. Hammond, T. C. Maxwell and E. H. Palmer of Geneva; Irving Rouse of Rochester and David Hunt of New York City.

THE BEARDSLEY MFG. COMPANY, Cleveland, Ohio, send out a collection of advertising material calling attention to some of their specialties, which include the Economic Self Basting Steam Roaster, Japanned and Galvanized Measures, Flaring Grain Measures, Paint and Oil Cans, Fire Shovels, &c. One of the advertising cards is a prettily decorated monthly calendar sheet and another, equally useful, is a blotter.

THE COHES TUBE WORKS, COHES, N. Y., have moved their New York office across the street to the Cornell Building, 141 Centre street.

A MEETING of the Board of Directors and of the stockholders in the Pittsburgh Plate Glass Company was held in the Carnegie Building, Pittsburgh, Pa., last week. The stockholders adopted the by-laws compiled by the Board of Directors and ratified the actions of that body in the formation of the trust. They also elected the following officers for the coming year: John Pitcairn, chairman of the Board of Directors; Edward Ford of Pittsburgh, president; A. L. Conger, Akron, Ohio, vice-president; A. U. Howard, secretary; E. L. Ford, Pittsburgh, treasurer; Artemus Pitcairn, Philadelphia, controller. The above concern embrace nearly all the plate glass concerns in the country, and a selling agency will be established at Pittsburgh, through which products of the different works throughout the country will be sold.

THE METAL REDUCTION COMPANY, 76 Churchhill street, Chicago, have introduced facilities for galvanizing long lengths, and can now handle pieces up to 45 feet. They have thus been enabled to secure important contracts for wind mill tower work. Their galvanizing department is now very busy. J. F. Forsyth, long identified with the pig iron business, is now devoting his energy to pushing the interests of this new but growing concern.

THE WORCESTER ELECTRIC GAS COMPANY, formed for the manufacture of a new gas machine, have been incorporated under the laws of Rhode Island. The capital stock is \$30,000.

B. B. MORRISON, formerly with Bruce & Cook of this city, and more recently New York agent for N. & G. Taylor Company of Philadelphia, has started in business for himself at 231 Water street, New York. Mr. Morrison will deal in Tin Plate, Sheet Iron and Metals generally, as well as Tinners' Specialties.

PETER A. FRASSE & Co., 95-97 Fulton street, New York, importers and dealers in Tools, Machinery, Hardware and Factory Supplies, have just completed a large new File Rack in which to keep their extensive File stock. This company's business, incorporated in 1891, was established in 1816. They are sole agents in America for David Borloz's Swiss Files. The Rack referred to is subdivided into 506 compartments, varying in depth from 12 to 16 inches. It occupies 135 square feet

of wall space, and contains six sizes of bins, ranging from $3\frac{1}{2} \times 3\frac{1}{2}$ to 6×7 inches. These Files are suitable for fine tool makers, die or pattern work, jewelers, silversmiths, lock makers or any work of a similar nature by workers in metals. Among the kinds are: Hand, Pillar, Half Round, Barrette, Square, Round, Tapers, Crossing, Equalizing, Three Square, Cant, Crochet, Pippin, Parallel, Escapement, Riffir, Checker, Broach, &c. Especial reference is made to the completeness of the assortment, which, it is said, would be hard to equal.

THE WÜHLER ALUMINUM COMPANY have removed their office and salesroom from 55 Jackson street to 66 Lake street, Chicago.

Canadian Customs Decisions.

The Board of Customs of the Dominion has made a number of decisions which have been approved by the Comptroller of Customs. Among the rates of duty thus established are the following: Brass, in strips, less than 4 inches wide, 30 per cent.; carpet sweepers, plated, 30 per cent.; carpet sweepers, not plated, $27\frac{1}{2}$ per cent.; cyclometers, 20 per cent.; fittings for cast iron pipe, cast iron, \$10 per ton, but not less than 35 per cent.; fittings for wrought iron pipe, malleable iron, 35 per cent.; galvanized wrought iron tubing, more than 2 inches in diameter, 15 per cent.; grenades, hand, 35 per cent.; Grinnell sprinklers, 35 per cent.; hose supporters, $32\frac{1}{2}$ per cent.; tool handles, entirely of wood, 25 per cent.; tool handles, filled with any metal, 35 per cent.; typewriters, $27\frac{1}{2}$ per cent.; brass tubing, cased, 30 per cent.; cases for jewels, cutlery, &c., filled, 5 cents each and 30 per cent.; copper tubing, brazed, 30 per cent.; oyster knives, 30 per cent.; palette knives, 35 per cent.; putty knives 35 per cent.; steels, butchers', 35 per cent.; steels, table, 30 per cent.

C. N. Hooper of Dubuque, Iowa, is organizing a company with a capital of \$200,000 to manufacture drawn or stamped steel work and enamel on steel and on cast iron. A leading press manufacturer in Europe is making a large press, weighing 25,000 pounds and capable of forming vessels 2 feet deep and 8 feet in diameter. The company will be able with this press to stamp steel work of exceptional size, like bathtubs, sink and sink backs, lavatories, closet tanks, chemical pans, &c., all to be enameled whenever desired.

The United States Patent Office officials are preparing plans for a very important exhibit for the Cotton States Exposition, Atlanta, Ga. It will not attain to that of the World's Fair in size, but the best features of that exhibit will be selected. An effort will be made to render the exhibit specially strong in cotton machinery and agricultural implements and other matters more closely related to Southern industries. A special feature of the Patent Office exhibit will be a demonstration of the various uses to which coal is put, and the manner in which it is mined.

The Mexican Government has awarded a valuable concession, with a subsidy, to the Tampico & Rio Grande Railway, to be built by Chicago and Boston capitalists.

TRADE REPORT.

The Iron Market.

In their eagerness to stimulate buyers the boomers are creating a false situation so far as the relations of manufacturers and their men are concerned. It is all very well to announce advances in price after filling up with work for months to come at the lowest prices, but while makers are trying to get more money for future work the men want a restoration of wages at once. With the newspapers full of reports of improvement, no assurances, however earnest they may be, will convince the men that the day for higher pay is still months away.

Producers have shown a commendable disposition to restore wages when they have really obtained higher figures in their sales. But there is evident impatience in labor circles, and there is some danger of a series of strikes. The Pocahontas Coke men have started it, and there is a rumor that some of the coal miners in Alabama will follow in June.

The most significant report which has gained currency during the past week is that a consolidation is being negotiated between the leading operators in the Connellsville Coke region, and that when effected the price will be advanced to \$1.50 for deliveries after July 1. W. J. Rainey of Cleveland advises us that there is no truth in the report so far as he is concerned. Meanwhile the advance to \$1.35 is not being realized, since round quantities of standard Connellsville Furnace Coke are being offered at \$1.10 @ \$1.15.

The Birmingham Pig Iron makers are jubilant over their achievement in advancing prices and claim to be selling some metal at the best figures established. They have certainly filled up with orders for many months to come at the lowest prices. It remains to be seen how soon Northern sellers will follow them. For anything but small parcels they have not yet done so. The demand is better, but does not yet justify very sanguine views.

Pig Iron.—There is a fair volume of business in the New York market, although the trade has been disturbed by the report of sales of Southern No. 2 Soft Iron last week at prices as low as any made in this section, a shade under \$10 being mentioned. One lot of 1500 tons, one of 1000 tons and a third smaller lot are referred to. It is believed that older options were availed of in these cases. Southern sellers have further advanced prices, but we cannot learn that orders have been placed at the new figures. Northern furnaces have not yet followed suit in this market. We quote \$12 @ \$12.50 for No. 1; \$10.75 @ \$11.25 for No. 2; and \$10.25 @ \$10.50 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.75 @ \$11 for No. 2; \$10.50 @ \$10.75 for No. 3; \$10.50 @ \$10.75 for No. 2 Soft, and \$10.75 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10 @ \$10.25.

Our Philadelphia advices indicate that in ordinary transactions sellers are getting about 25¢ advance on last week's prices. Large buyers are either already supplied or have had their options extended so as to hold their trade, but concerns whose statements can be relied upon claim nothing beyond this. They say that on carload and 50 to 100 ton lots they get the advance, and except in such special cases as mentioned the advance will become general in course of a few days. Buying is not extremely heavy because of the advance, but sellers feel that they control the situation, and would just as soon keep their Iron as sell it at present prices, as there is a fair chance for a still better market later on. The course of events during the week therefore have been favorable to furnace products. Sales have been at prices as follows for Philadelphia, and 30¢ @ 50¢ less for deliveries at points within 100 miles South or West:

Bessemer	.....	\$12.60 to \$12.75
Standard No. 1 Foundry X.....		12.00 to 12.50
Standard No. 2 Foundry X.....		11.25 to 11.50
No. 2 Plain.....		10.50 to 10.75
No. 1 Soft.....		11.50 to 11.75
No. 2 Soft.....		10.75 to 11.00

Good inquiries are still in hand in the Chicago Pig Iron market. A fair business has been done in local Iron, but sales were not so heavy as in the previous weeks. Excellent inquiries are still coming forward. The improved condition of general business is expected to make more foundrymen busy and to bring in a fresh crop of buyers. The Pocahontas Coke strike may cause some trouble, as a great deal of Coke from that district is used in the local furnaces and foundries. A moderate demand is reported for Lake Superior Charcoal, with prices also a little firmer. Quotations are as follows, for cash:

Lake Superior Charcoal.....		\$13.00 to \$13.50
Local Coke Foundry, No. 1.....		10.50 to 10.75
Local Coke Foundry, No. 2.....		10.25 to 10.50
Local Coke Foundry, No. 3.....		9.75 to 10.25
Local Scotch No. 1.....		10.50 to 11.00
Ohio Strong Softeners, No. 1.....		12.50 to 13.00
Southern Silvery, No. 1.....		12.00 to 12.25
Southern Silvery, No. 2.....		11.75 to 12.00
Southern Coke, No. 2.....		10.50 to 10.75
Southern Coke, No. 3.....		10.00 to 10.25
Southern, No. 1 Soft.....		10.50 to 10.75
Southern, No. 2 Soft.....		10.25 to 10.50
Alabama Car Wheel.....		17.50 to 18.00
Jackson County Silvery.....		15.00 to 15.50
Other Ohio Silvery.....		14.25 to 14.50

Foundry Irons are dull and neglected in the Pittsburgh district. A sale of 500 tons of No. 3 Foundry was made last week at an extremely low price, deliveries running into September. Quotations are given as follows, for cash:

No. 1 Foundry.....		\$10.50 to \$10.75
No. 2 Foundry.....		10.00 to 10.25

Advices from the Cincinnati district are to the following effect: From a local standpoint the Iron situation is one of encouragement. The aggregate tonnage sold during the past week, while not equal to the heavy transactions of the week previous, has been of liberal proportions, and in some respects of a more satisfactory nature. The volume of business created by the advance of Southern Iron noted a week ago and the expectation of a further advance have placed the Southern producers in a still stronger position, which has resulted in another rise

of 25¢ per ton on all grades of Southern stocks for May, June and July delivery, and for later deliveries another advance of 25¢ per ton is demanded. Furnaces along the Ohio east of this point have also manifested a firmer and more confident feeling, instructing local agents to day to advance prices. Orders for carload lots have been numerous, not a few contracts for from 100 to 600 tons and five or six orders of from 1000 to 2000 tons, but no such heavy individual transactions as have taken place for several weeks past have come to light. One feature of interest is the larger relative amount of Charcoal Iron being sold. Quotations are given as follows:

Southern Coke, No. 1.....		\$10.00 to \$10.25
Southern Coke, No. 2.....		9.50 to 9.75
Southern Coke, No. 3.....		9.00 to 9.50
Southern Coke, No. 1 Soft.....		9.50 to 9.75
Southern Coke, No. 2 Soft.....		9.25 to 9.50
Ohio Soft Stone Coal, No. 1.....		14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....		14.00 to 14.50
Lake Superior Coke, No. 1.....		11.75 to 12.25
Lake Superior Coke, No. 2.....		10.75 to 11.50
Hanging Rock Charcoal, No. 1.....		11.00 to 11.50
Hanging Rock Charcoal, No. 2.....		10.50 to 11.00
Hanging Rock Charcoal, No. 3.....		9.50 to 10.00
Tennessee Charcoal, No. 1.....		13.00 to 13.50
Tennessee Charcoal, No. 2.....		12.00 to 12.50

The situation of Pig Iron in the St. Louis market is reported as greatly improved. The past week's business has been larger than any one week for two years past and at an advance of from 25¢ to 50¢ per ton over prices ruling 30 days since. Nearly every large consumer of Iron has been a buyer and some of them have doubled their original orders. No. 1 Foundry is now quoted at \$10 25, f.o.b. cars St. Louis, while No. 2 Foundry is firmly held at \$10. Consumers who have not bought will be disappointed if they expect to be able to fill their requirements at the old price, as furnaces are at present in a more independent position than they have been for two years past, and refuse to accept orders at less than the prices quoted below. Stocks on the furnace banks are unusually light and a still further advance is not improbable. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....		\$10.25 to \$10.50
Southern Coke, No. 2 Foundry.....		10.00 to 10.25
Southern Coke, No. 3 Foundry.....		9.50 to 9.75
No. 1 Soft.....		10.00 to 10.25
No. 2 Soft.....		9.75 to 10.00

Metal Market.

Pig Tin.—The market rules fairly strong, with a slight advance in wholesale prices. Speculation has shown rather more spirit, and trade with interior dealers and consumers has been fully up to average volume. Along with light arrivals the distribution has sufficed to reduce stocks in first hands, and while still of liberal amount the holdings are well scattered. Manipulation by the "bull" interest has, however, been a more potent factor in regulating prices. Small business has been satisfactory in volume, and prices for moderate sized jobbing lots of Straits Pig have continued firm at last week's quotations, namely, 15¢ @ 15½¢ per lb. The stock in the United States, exclusive of Pacific Coast, is estimated at 3131 tons, an increase of 440 tons during the past

month. On the 1st inst. there were afloat for this country and landing 805 tons. The visible supply for Europe and America is placed at 23,875 tons, against 18,307 tons a year ago. Shipments from the Straits during April amounted to 4950 tons, including 3050 tons to London, 700 tons to the Continent and 300 tons to the United States.

Copper.—A further advance in wholesale prices has taken place and the market is very firm. Considerable business has been done during the week, chiefly for home trade account. Casting Copper being in special demand. The strength of the market is due in part to light offering and very fair trade demand, but speculative doings and covering of short sales have been something of a factor. No change can yet be made in quotations for small parcels at retail, which remain on a basis of 10½¢ for Lake Ingot.

Sheet Copper.—Some good orders have been placed for Cornice Copper within the last few days. Stocks in consumers' hands are known to be low, and there are indications that retailers and consumers are preparing to buy for stock again instead of confining themselves to the policy of buying only for present consumption, which they have followed for the past 18 months. The outlook is regarded as favorable for a good and improving business in manufactured Copper during the coming months. A strong possibility seems to exist of an advance in prices in the near future should the present advance in Ingot here and abroad be maintained. Quotations on small lots of Sheet Copper from store are unchanged at the net list rate of 14¢ $\frac{1}{2}$ lb.

Pig Lead.—Dealings have been moderate and the demand has shown very little vigor. Sellers have offered rather more freely, but not with pressure sufficient to depress values a great deal. Retail business has only been of a moderate character. Prices for small lots of American Pig rule at 3½¢ @ 3½¢ $\frac{1}{2}$ lb.

Lead Pipe and Sheet.—The condition of the market for manufactured Lead is much the same as outlined in our report of last week. While the consumptive demand is rather more active, the aggregate volume of business still falls short of the average for a good season. Inquiry is somewhat better and the feeling appears to be more favorable toward an improvement in the trade. Prices in this section are maintained on the last basis of 5½¢ for Pipe and 6½¢ for Sheet Lead, subject to a discount of 20%.

Spelter.—There is no change in the market for this metal, business here being rather slow, with large transactions quite the exception. Prices for small lots have remained quite steady at 3½¢ @ 4¢ $\frac{1}{2}$ lb for good Western brands.

Antimony.—Routine business only has been effected and prices are still rather easy, small parcels from store being quoted at about 8¢ for Hslett's and 9½¢ @ 9½¢ for Cookson's.

Tin Plate.—Wholesale business has been unusually flat during the week, some few orders for forward deliveries of Ordinary Cokes being about the only features of any importance. No improvement either in business or in the demand has taken place, and the market is showing rather weak tone, notwithstanding that stocks of imported Plates are far from full, and many foreign makes are out of the market altogether. This condition appears to be offset, however, by the increas-

ing output of domestic Plates, some of which are said to have been placed on this market lately at lower prices than those at which Welsh Plates of corresponding grade could be imported. There has been a fair run of small orders especially for Roofing Plates since the first of the month, but even this trade is considerably below the average of the season. Prices have undergone no positive change, but they depend largely on the conditions of each buyer, and published quotations can only be taken as approximate.

A special London cable dispatch of May 1 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate market has been dull and quotations are irregular. Moderate orders have been obtained for special sizes of Cokes, chiefly Canada, and more demand is reported for Oil sizes for Russia. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 14 1/2 x 20	9/	@ 9/3
Siemens Cokes, 14 1/2 x 20	9/14	@ 9/6
Turners, 20 x 28	18/	@ 22/8
Charcoals, 14 1/2 x 20	11/	@ 13/6

Sheet Iron.—The demand for both Black and Galvanized Sheets continues heavy. Mills are reported to be very busy and some of them are pretty well sold up to July 1. Jobbers, too, have been doing more in the line of Sheet Iron than for some time past, Galvanized Sheets, in small lots, being in quite active demand in this district. Prices are quite firm. Small lots of No. 27 Common Iron are quoted at 2.70¢ @ 2.75¢ $\frac{1}{2}$ lb. Galvanized, under the same conditions, rules at 75 and 5¢ to 75 and 10¢ off, according to size of order and condition of delivery.

Chicago Report.

Scrap.—The demand is good. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb.
No. 1 Wrought Scrap	\$6.50	....
Machinery Cast	5.50	....
Malleable Cast	5.00	....
Stove Plate (free of burnt) ..	4.00	....
Burnt Iron and Grate Bars ..	3.00	....
Sheet Iron and Hoops	2.00	....
Plow Steel and Breaking ..	4.00	....
No. 2, such as Shovels, Hoes, &c.	3.00	....
Old Boilers—whole (Iron) ..	3.00	....
" (Iron)—cut in single Sheets and Rings ..	5.00	....
Old Gas-Pipe and Boiler Tubes	5.00	....
Cast Borings	3.00	....
Turnings	4.00	....
Horseshoes	7.50	....
Copper Bottoms	6 ¢	....
Copper Clips and Heavy	7 ¢	....
Heavy Brass	6 ¢	....
Light Brass	3 ¢	....
Pipe Lead	2 1/2 ¢	....
Tea Lead	2 ¢	....
Zinc	2 1/2 ¢	....
Rubber	4 ¢	....

Anthracite.—Trade is quiet. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.	\$4.60	\$4.75
Milwaukee, Wis.	4.60	4.75
Kansas City, Mo.	7.80	7.95
Council Bluffs, Iowa.	7.80	7.95
Lincoln, Neb.	7.95	8.10
Sioux City, Iowa.	7.80	7.95
Aberdeen, S. Dak.	7.85	8.00
Des Moines, Iowa.	5.90	6.05
Davenport, Iowa.	6.10	6.25
St. Paul, Minn.	7.10	7.25
Burlington, Iowa.	6.10	6.25
Des Moines, Iowa.	7.60	7.75
Davenport, Iowa.	5.90	6.05
St. Joseph, Mo.	7.80	7.95
Leavenworth, Kan.	7.80	7.95
Omaha, Neb.	7.80	7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver	\$3.00
Pueblo	8.00
Colorado Springs	8.00
Leadville	8.00
Cheyenne, Wyo.	10.00
All points between Denver and Missouri River	8.85

CONDITION OF THE

Hardware Trade.

ONE OF THE FEATURES of the market is a somewhat firmer tone on several lines of goods, though the improvement is not manifested so much in the way of announced advances as in the withdrawal of ragged extras, extreme concessions, &c. As a result of this, together with a steady business of fair volume, the trade are taking a more hopeful view of the situation and of the prospects for a still further improvement in business. Buyers are still very cautious in placing their orders but are purchasing a little more freely than for some time, there being a number of lines of goods which are regarded by well-informed parties as a safe purchase at ruling prices—that is, for such quantities as are likely to be called for in the regular course of trade during the next few months. It is also a good sign that there is more inquiry for Builders' Hardware, and reports indicate that during the season there will be much more activity in building operations than during the past year. The effect of this will naturally be more fully felt after a little. Mechanics' Tools are also moving more freely, seasonable goods naturally constituting a considerable proportion of current business. There is some complaint in regard to collections, but considering the season the financial situation is not unsatisfactory.

Advices from Chicago.—The Shelf Hardware trade keeps up to its volume for the past few weeks and prospects are excellent for its continuance. Orders continue to grow larger and some disposition is shown to lay in stock slightly in excess of daily necessities. The demand for Builders' Hardware and general building supplies has grown considerably, showing that building is being more actively prosecuted. The demand for Tin and Terne Plates and Galvanized Iron has shown decided improvement since the last report. An exceptionally large trade is being done in Poultry Netting; some houses report the largest trade in this line they have ever had. House Furnishing Goods are moving quite freely, but complaint is heard in a few cases of irregularity in prices, caused by offerings of last season's patterns at reduced prices. Manufacturers in such instances are endeavoring to work off stocks which they have carried over at a sacrifice, which seems to be an imprudent thing to do at this time of the year. Prices are injuriously affected at a time when they should be well sustained. Staple Goods maintain their low range of values without any indication of an early improvement.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in about the same condition as last week, the manufacturers maintaining the slightly advanced quotations. There is also a general disposition to refuse to accept orders for future delivery at prices now ruling,

American Window Glass.

Sizes.	Single.				Double.		
	Prices per 50 feet.				Prices per 50 feet.		
	1st.	2d.	3d.	4th.	1st.	2d.	3d.
6 x 8 to 10 x 15.....	\$7.00	\$6.50	\$6.25	\$6.00	\$9.50	\$8.50	\$8.25
11 x 14 to 16 x 24.....	8.00	7.25	7.00	6.50	10.75	9.75	9.50
18 x 22 to 20 x 30.....	10.50	9.50	9.00	8.25	14.00	12.75	12.00
15 x 36 to 24 x 30.....	11.50	10.00	9.25	.....	15.25	13.75	12.25
26 x 28 to 24 x 36.....	12.00	10.50	9.50	.....	16.00	14.50	13.25
26 x 34 to 26 x 44.....	12.75	11.75	10.25	.....	17.25	15.50	14.00
26 x 46 to 30 x 50.....	15.00	13.50	12.00	.....	19.75	18.00	16.00
30 x 52 to 30 x 54.....	15.50	13.75	12.25	.....	20.50	18.50	16.50
30 x 56 to 34 x 56.....	16.50	14.75	13.50	.....	21.50	19.75	18.00
34 x 58 to 34 x 60.....	17.25	15.75	14.50	.....	22.75	21.25	20.00
36 x 60 to 40 x 60.....	19.00	16.75	15.75	.....	25.50	23.00	22.00

The new list for American Glass is the same as that of imported Glass adopted by the New York Importers, October 1, 1894, which is also given herewith, and which is subject to a discount of 70 per cent. for both single and double, with the following exceptions: Each quality of the first and second bracket, both single and double, is advanced 50 cents per box:

glass, one side being of wood. Here an exhibition is given of the use of their fire nozzle, showing how the water can change almost instantly from a constant stream to a large spray. The spray is caused by placing a ball in a funnel shaped opening, which spreads the water, the ball being held in place by the action of the water. In this room two of their ball nozzle sprays are

French Window and Picture Glass.

Sizes.	Single.				Double.		
	Prices per 50 feet.				Prices per 50 feet.		
	1st.	2d.	3d.	4th.	1st.	2d.	3d.
6 x 8 to 10 x 15.....	\$6.50	\$6.00	\$5.75	\$5.50	\$9.00	\$8.00	\$7.75
11 x 14 to 16 x 24.....	7.50	6.75	6.50	6.00	10.25	9.25	9.00
18 x 22 to 20 x 30.....	10.50	9.50	9.00	8.25	14.00	12.75	12.00
15 x 36 to 24 x 30.....	11.50	10.00	9.25	.....	15.25	13.75	12.25
26 x 28 to 24 x 36.....	12.00	10.50	9.50	.....	16.00	14.50	13.25
26 x 34 to 26 x 44.....	12.75	11.75	10.25	.....	17.25	15.50	14.00
26 x 46 to 30 x 50.....	15.00	13.50	12.00	.....	19.75	18.00	16.00
30 x 52 to 30 x 54.....	15.50	13.75	12.25	.....	20.50	18.50	16.50
30 x 56 to 34 x 56.....	16.50	14.75	13.50	.....	21.50	19.75	18.00
34 x 58 to 34 x 60.....	17.25	15.75	14.50	.....	22.75	21.25	20.00
36 x 60 to 40 x 60.....	19.00	16.75	15.75	.....	25.50	23.00	22.00

The reason given for advancing the list prices of the first two brackets over that of the importers' list is that these sizes are in the greatest demand and that heretofore they have yielded very little if any profit. As far as we have learned the new list of American Glass has been adopted by all manufacturers and jobbers. A Pittsburgh paper devoted to the Glass interests states that manufacturers seem to have definitely given up the idea of holding another meeting for the purpose of effecting a combination of interests.

arranged so that they gyrate from the force of the water passing through them, showing the application in case of fire, every portion of the room being reached by a jet of water when in operation. In the center of the store they have erected shelving and counters where their business is transacted. In passing from this display into the other store green velvet carpet is arranged to represent lawns, with walks laid out and potted plants and easy chairs arranged as they would be in a well kept ground.

THE AMERICAN BALL NOZZLE COMPANY are making a handsome display of their specialties at Broadway and Thirteenth street, New York, occupying two large stores. A man in livery directs the sightseers on entering the building. The first thing to attract their attention is a fountain with a basin 15 feet in diameter, surrounded by plants and covered by moss, in the center of which one of their ball nozzles is used to make the spray. At one side of this is the statue of a fireman holding their fire nozzle. Back of this display is a room, three sides of which are

THE HERO STAMPING WORKS is the name of a recently organized concern at Cleveland, Ohio, for the manufacture of Furniture, Trunk and Carriage Trimmings, Novelties for the hardware and specialty trade and patented devices of any kind required in stamped goods. They mention that manufacturers using small iron or malleable castings can be supplied with articles similar in shape from stamped iron or steel, which will be just as serviceable and less expensive. The works, which are equipped with the latest machinery, began operations May 1.

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THE METAL WORKER.

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A Sewage Disposal Plant.

The new sewage disposal plant with pumping station now being constructed at Reading, Pa., embodies several features of interest. Although the present population of the city is only 60,000, with a *per capita* use of 120 gallons of water daily, the capacity of the plant will be sufficient for a population of 150,000 with a daily use of 100 gallons per capita. Adjoining the pump room, which will have at present only a single pump with a capacity of 5,000,000 gallons per 24 hours, are two receiving reservoirs. From the branch of the main sewer the sewage falls by gravity to these reservoirs, first passing through a suspended screening, which will remove the coarser matter. Beneath these screens and above the surface of the sewage in the reservoirs is a free circulation of air, secured by the action of ventilating flues surrounding the boiler smoke flue and discharging the foul air nearly 100 feet above the ground. The disposal plant proper is located about a mile from this station and consists of filter beds divided into upper and lower sections. The beds or compartments are two storied, somewhat after the manner of the reservoirs at the pumping station. The upper beds, above which are arranged the distributors, are formed of about 2 feet in depth of fine sand properly supported. Eight feet beneath are the lower beds, made of coarse sand upon broken stone, with drains beneath to conduct the purified liquid to the river, on the banks of which the beds are located. The vertical space between the upper and lower beds permits of the thorough aeration of the sewage as it falls.

Artist-Artisan Institute.

The trade and technical schools which are springing up around us show that the practical and theoretical training of the American artisan is constantly re-

ceiving more and more attention. This is a thing to be thankful for and one to be encouraged in every possible way. The borders of general learning have also been enlarged in the common schools, in night schools, in workmen's institutes and similar establishments, so that the young American craftsman of to-day has every opportunity to furnish himself with a good general education at small cost. There is, however, another field of education which seems to have been but little developed as yet in this country. This is the field of industrial art. That the inculcation into artisans of the principles of art, in order to improve their work as artisans, is a very important branch of industrial training, has long been recognized abroad, where instruction in art is often combined with trade education in a manner which is practically unknown in the United States. To help supply this deficiency the Artist-Artisan Institute was started some years ago in New York City. The purpose of its founder, John Ward Stimson, was to teach artisans the underlying principles of art in such a manner as to enable them to combine artistic principles with practical methods. Workers in metal were particularly invited to avail themselves of the opportunities offered by the institute. The fees for instruction were sufficiently moderate to place its advantages within the reach of most workmen, and it was hoped that a large number of the younger craftsmen would be encouraged to support this enterprise.

An Opportunity for Metal Workers.

Judging from an inspection of the eighth annual exhibition of the institute, held last week, it seems that this class of artisans have failed to grasp this opportunity. The exhibits were numerous and very satisfactory of their kind, but they did not include a single specimen of metal work of any description. In fact, it was learned, on inquiry, that the class in metal work had not been started during the past season, as only one application for instruction was received. Beyond specimens of work in the designing of wall papers and book covers, and a few examples of wood carving and modeling, there was hardly anything displayed that might be said to come within the scope of real industrial art. The majority of the pupils appear to have gone in for the "artist" half of the institute's title, pure and simple, while the "artisan" side has been neglected. This is a thing to be regretted, as art schools, as such, are abundant enough all over the country, whereas schools where

artisans may be trained in industrial art are rare. It is to be hoped that the coming season may see more interest evinced by the craftsmen of this city in the work of the institute, as we understand that its managers are extremely anxious to develop this branch of the enterprise more fully, and they are prepared to give every possible facility to artisans desirous of taking a course of industrial art either in wood or metal. There is room for the infusion of much more good art into our decorative metal work, and an institution such as the Artist-Artisan Institute seems to be the only place where the ability to do this can be gained by the ordinary trades man.

The Planished Iron Trade.

Careful investigation of the use of planished iron by railroads discloses the fact that the statement made in *The Metal Worker* a short time since, relative to the substitution of cheap painted or japanned sheets for locomotive jackets, was too sweeping. The movement in that direction has not been of the important character which was anticipated when it was first perceived. It may be set down as exceptional, especially as many railroad officials are of the opinion, based on years of experience, that the use of planished iron is much more economical than cheaper sheets, even though the prime cost is much greater. It may not be known by the trade in general that the continued high cost of planished iron is owing to its very high cost of production. The method of manufacture has not been changed, because it has not been found possible to change it. Although steel is now very cheap as compared with charcoal iron, and has driven iron out of the market in many lines, steel cannot be used in the manufacture of planished sheets. They are made of charcoal iron, precisely as in the days when the use of charcoal iron was quite common and when the planished process was perfected. By this process no acid whatever is used, the sheets are not pickled, but the scale, if there is any, becomes a portion of the surface, forming a protecting oxide. This process has not succeeded with steel up to the present time, notwithstanding numerous expensive experiments. Therefore planished iron is still planished iron and not steel, and its uses are growing instead of diminishing.

Fifteen coal companies operating 23 mines in Iowa have organized to keep up prices and reduce the cost of production.

THE LETTER BOX.

Making Blue Prints.

From H. J., Kingston, N. Y.—I would like very much to gain some information through *The Metal Worker*, knowing that it can assist the practical business man on many different subjects. The progress of the times requires that in the city of Kingston a plumber has to draw a plan of all work that is to be done and must furnish a blue print of it to the officials. You would confer a favor upon me and a great benefit on my fellow workmen if you would let me know how blue prints are made and what is required to make them.

Note.—It is probable that some of our readers have a method and apparatus for making blue prints specially adapted for the requirements of this correspondent and we hope they will describe them. In order that he shall have some information on the subject we give the following:

The process of making blue prints is neither expensive nor difficult. In making a blue print the first thing is to secure a supply of ferro prussiate paper, which may be obtained from any dealer in photographic or artists' materials. If our correspondent cannot obtain the paper he can make it with little trouble. Almost any white paper of good quality is suitable. It is prepared by subjecting it to a sensitizing solution, made by taking 1 ounce of citrate of iron and ammonium and 4 ounces of water, and mixing it with 1 ounce of red prussiate of potassium and 4 ounces of water. The two solutions are mixed in equal quantities and to an amount sufficient to sensitize the paper required for immediate use. The solution may be applied to the paper with a sponge or flat brush, or, if convenient, the paper may be floated in the solution, which is considered the better way. After this has been done the paper should be dried in a weak light. The paper prints better when fresh, and it would be well, therefore, to prepare paper only as required for use. The citrate of iron and ammonium should be kept in a dark bottle from air and light. The paper should be stored in a dry place and be entirely shielded from daylight before being used and while putting it into the printing frame.

After the paper is ready for use and a print is desired the printing frame is placed upon the table and the back board removed. The inked in drawing is then placed upon the glass with the inked side next to the glass, and a piece of ferro prussiate paper, with its colored side toward the drawing, put in. The back part is then placed in position in the printing frame and fast-

ened by slipping the springs attached to it under the buttons screwed on to the frame. The printing frame is then exposed in a place where the sunlight will fall directly upon every part in order to make the print equally intense in every portion, and is left for from 15 to 30 minutes or longer, according to the strength of light and the density of the lines of the drawing. In order to ascertain if the exposure is sufficient the frame may be removed to a place where the light is weak or subdued, one half of the back part opened and the paper bent back in order that the print upon its surface may be seen. If it is clear and distinct the paper may be taken out and placed in a pan of clear water, where it should be left until the whites of the print are clearly brought out. The paper being no longer sensitive may be dried wherever most convenient. If the printing frame containing the paper is not exposed long enough the print will very likely have a pale blue instead of the indigo hue desired. If what should be white in the picture has a blue tint it indicates overprinting or that the picture was exposed to a bright light before the paper was washed. The blue print can be conveniently written on by using a solution of common soda thickened with gum arabic. Adding the soda to red ink will give a fluid by means of which a brilliant red line may be made on the print.

City Farming.

From JOHN COOPER, Boston.—Your remarks upon "City Farming" in *The Metal Worker* of May 4 are both timely and pertinent, as it is not charity that working men ask for, but a possibility to turn their capacities into useful things that is needed so much. And how or why it is that human beings, as a society, can quietly look on and see valuable time wasted in forced idleness is passing strange. The earth is the source from which most of the good things needed can be obtained and labor is a means to that end, and when it can be intelligently directed should make the poor comparatively rich and the rich richer, as that which benefits labor generally sheds its benign influence upon all. Therefore it would appear to be the paramount duty of all to do the best they can to find employment for all at a price that shall return something more than cost. Idleness is the parent of mischief; therefore it is fair to presume that when reasonable occupation can be secured for all, the tramps and other so-called bad people that now trouble society would be eliminated from it. This kind of aid to the working poor may be one of the most humanitarian engagements that has hitherto been undertaken, and if it is

possible to extend it so as to open a way for a broader and better means of turning the forced idle that we constantly have in our midst into industrious people, one of the best means of aiding human progress has been hit upon. General Booth says: "Keep the people employed," and when it can be done I think they will soon become useful, profitable and virtuous members of society. This is an age of new inventions, and why not have one to procure profitable employment for all? This might not be a panacea, but it would be a great help.

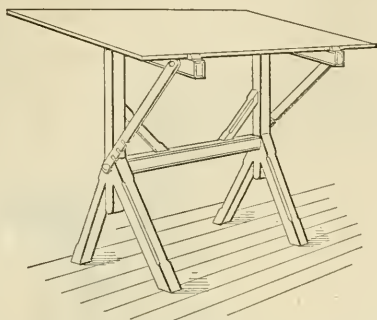
Joints in Greenhouse Piping.

From T. C., Boston.—*The Metal Worker* of May 4 contains a rejoinder to "T. C.," who takes no exception to anything said by "W. F. C." concerning things from the Hub. As all good things do not come from any one place, therefore, some good things may emanate from the Hub and even Western wilds. Here one might be facetious, would time or the space of this valuable paper permit it. It would be well for "W. F. C." to give proportional quantities of each material to be used, so that one might be able to speak intelligibly of the dilutant rye flour, which is a quickly destructible ingredient of the proposed compound and time alone can answer as to the value of it. I have seen rust joints after from 10 to 15 years' use made with sal' as well as sal' and sulph', and saw no apparent excessive corrosion adjacent to the joints, so that I think such joints would be good enough for the Hub and Western wilds also.

A Balky Furnace.

From C. H. A., Lansing, Mich.—In answer to "J. H. W.," whose balky furnace is described in *The Metal Worker* of April 20, will say he certainly is not responsible for the furnace not working, for there are many people in this world who do not know when they have a good thing or when a good job has been done for them. In this case "J. H. W." ought not to stand the expense of experimenting in trying to make the furnace do something which it rebels against. If he has to make changes at his own expense the following will help him out. He has placed the air duct at what may be termed the leeward corner of the building, so that the prevailing winds tend to blow past it and suck air out of the duct instead of forcing it in. I would suggest that the duct be placed under the library in the center of the house and run direct to the furnace without any angle in it, but if any angle is necessary the capacity of the duct should be increased one-fourth at the angle. Then for windy, cold weather, a duct with a capacity of 500 square inches should be taken from the hall. This will tend to draw the heat up the pipes that do not work, and by so doing draw the cold air from all over the house. Long hot air pipes should have a rise of at least 1 inch to the foot—more is better. In some cases we have had to put the fur-

nace in a pit a foot or more deep, and in one case sunk it nearly 2 feet in order to get elevation for the hot air pipe. The people using this furnace are better pleased with its work than can be said of any furnace that we have placed in 1895. In this part of the country cold air ducts from the hall are used extensively, and the saving in fuel is at least one-sixth over the consumption with outside ducts. No trouble is experienced



Designs for Drawing Table.—Fig. 1.—General View of Table.

from the lack of fresh air, as plenty is sure to leak into any building. The one great mistake that many furnacemen make is to allow their patrons to dictate to them where they shall locate the furnace, hot air pipes and registers. In nine cases out of ten they have to suffer for doing it. We let the job go to the fellow who will do as he is dictated to by the owner rather than go against our best judgment. In this way, and in this way only, can people be educated and a satisfactory business built up.

Wagon Equipment.

From T. J. EFFINGER, Blacksburg, Va.—Will *The Metal Worker* or some of its readers tell me what would be the best for roofing a light spring wagon? Would a tin roof make it too hot inside? Where can I get a very light cooking stove, to burn wood, which would be suitable for use both in the wagon and outside of it?

Note.—Some of our readers can doubtless give some information which will be valuable to this correspondent. There is no reason why a tin roof should make the wagon any hotter than a canvas roof. If our correspondent desires to reflect the heat of the sun, some advantages can be gained by painting the roof white. The use of tin for roofing light wagons has been satisfactory in a great many cases. Our correspondent can get a stove suitable for his purposes from several different manufacturers if he will state the space which the stove is to occupy and the limit he will put on its weight. A cast iron stove with an oven 12 inches square, weighing 75 pounds, can be had for burning coal, and it will burn wood satisfactorily if the wood be cut small enough to go into the fire chamber. A junior gasoline stove has been used in wagons in a number of cases with excellent results and might be adapted for the present requirements.

Designs for Drawing Table.

From F. K. T., Knoxville, Tenn.—I send inclosed designs of a drawing table, which may be of interest to some of your readers. The frame of the table was constructed to hold a 36 x 60 inch perspective board and to be used with the board as a table when working with smaller boards. A general view of the table is shown in Fig. 1 of the sketches, while Fig. 2 represents a front

elevation and Fig. 3 an end elevation. From an inspection of the latter it will be seen that the top may be adjusted to stand at any desired angle. The principal part of the frame is 2 x 3 inch poplar, stained and finished to represent black walnut. A smaller board as a top and lighter material for the frame could be used if preferred.

Is It Sanitary?

From J. C., Boston.—In *The Metal Worker* of May 4, "B. C. H." of Hayward, Cal., raises a questionable point to answer respecting the sanitary or unsanitary condition of the piece of work shown by his illustration. To say the least, the 2 inch vent pipe should have been continued full size to the end. Even then to decide such a question properly some of the adjacent pipes of

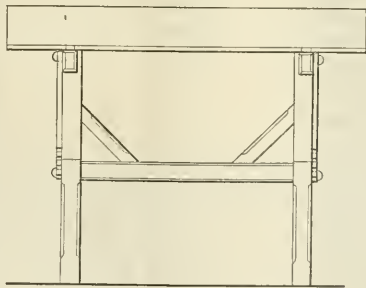


Fig. 2.—Front Elevation.

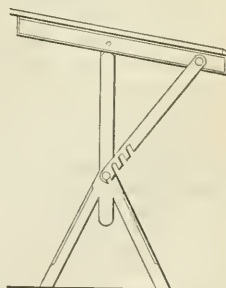
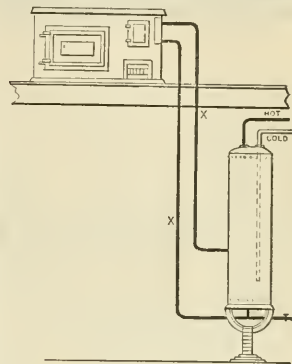


Fig. 3.—End Elevation.

the system should have been shown. To illustrate what I mean, suppose the 2 inch waste pipe falls into a 4-inch horizontal pipe where air is free to pass then the fixture is perfectly correct as it is. But if it enters a 4 inch upright pipe where other fixtures are connected above the junction of the 2 inch waste connection, falling water from above may at any time in its descent cover that orifice; then the trap as it is shown might be siphoned and therefore the fixture would be unsanitary.

Kitchen Boiler Below Range.

From P. S. J., Jersey City, N. J.—I submit a sketch of a boiler connection which I have made at the earnest solicitation of one of my customers and against my best judgment. The range is a brick set range in the kitchen and the boiler is located in the basement underneath, so that there is a space of about 18 inches between the top of the boiler and the bottom of the water back. After the connection had been completed and the range fired, heat could be detected in the pipe connecting in the side of the boiler as far down as X, and, strange to say, the pipe running to the bottom of the boiler shows heat at a point a couple of feet below this, as



Kitchen Boiler Below Range.

shown by the lower X. I have talked with a number of plumbers about this connection and am told that such connections have worked, while others claim that they will not work. I should be glad to hear from the readers of *The Metal Worker* if it is possible to get a circulation between the boiler and the water back and what must be done to secure it. Owing to the arrangement of the house there is no available place in the kitchen for the

boiler, and it is not desired to put the boiler in the room above the kitchen. I think that there must be some way of making this arrangement work and shall be glad to have the plumbing readers give their experience with jobs of a similar character.

According to the *Tradesman* of Chattanooga, Tenn., there are at present 872 cotton mills building and in course of erection in the Southern States.

The staved or barrel tank made from cypress lumber is the best in all respects, and for most purposes need be no more than of 1000 gallons capacity, or 7 feet high by 6 feet in diameter. The staves may be $1\frac{1}{4}$ inch lumber, bottom $1\frac{1}{2}$ inches thick, with all seams plain and well jointed; six hoops of $\frac{3}{4}$ x 2 inch iron, lapped and riveted with five rivets, $\frac{3}{8}$ -inch, flat heads inside; tank tapering from the top, so as to drive the hoops down.

Iron or steel tanks may be made by sheet iron workers, and for the above size No. 12 gauge iron riveted with $\frac{3}{4}$ -inch rivets and painted inside and out with two coats of red oxide of iron

Where it is convenient to place the windmill over a well, a frame should be made to support the post with guy rods or wooden braces, but in all cases the pump should be placed in a pit to protect it from frost. Where it is convenient to place the mill upon a barn and the pump at some distance, a pair of T bell cranks can be used to convey the power a short distance horizontally from the mill to the pump.

The Scaphander is the name of a device for enabling firemen to penetrate fire and smoke with impunity which has lately been adopted in Berlin, Germany. The outfit bears some resem-

houses. In these establishments it appears that the average working day is from 8 a.m. to 6 p.m., with from 30 to 45 minutes for lunch, except on Saturday, when in many stores the employees work as late as 11 p.m. This is also the case for from 10 to 14 days during the Christmas holidays, when they remain without extra compensation. In some of the smaller stores women are employed from 8 a.m. to 9 p.m. in each week day and as late as midnight on Saturday. Some of the employees also work on Sunday from 8 a.m. to noon for an extra compensation of 75 cents. Large numbers of girls are employed, from 14 to 16 years of age, at wages ranging from \$1.50 per week upward. The committee have ascertained from the testimony of employers that

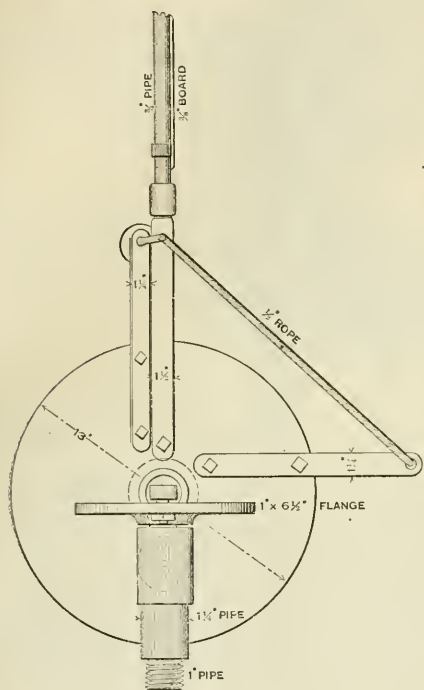


Fig. 2.—Plan of Revolving Flange.

paint and boiled oil makes a substantial and durable tank. For plumbers the cast iron sectional tanks of the trade are easiest handled and satisfactory in every way. The size of the pump is of much importance in laying out a wind-mill pumping plant. If it is too large the mill will only run in the strongest winds, and its daily yield of water may be little or none. A pump for a 6 foot mill, if single acting, should not be larger than 2 inch diameter by 4 inch stroke for 50-foot lift, and $1\frac{1}{2}$ -inch diameter by 4-inch stroke if double acting. As but very few pumps of the trade are made for as short strokes as 4 inches or less, the longer stroke pumps can be used by adjusting the buckets to the lower part of the chamber to avoid too great clearance, which interferes with discharging the air from the suction pipe.

blance to the dress usually donned by divers when at work. The materials of which it is constructed are asbestos and rubber, so treated as to be absolutely fire proof and impermeable to heat. A helmet is hermetically fitted to the suit, a plate of glass, specially prepared to withstand a high temperature without cracking, being embedded in the front thereof. Air is supplied by means of a tube, as in the case of a diver. With this contrivance it is possible to enter parts of a burning building where, under ordinary circumstances, human life could not exist. The Scaphander has been in use in Berlin for some time and is said to have proved efficacious both for fire fighting and life saving purposes.

A special committee of the New York State Assembly has been recently investigating the condition of female labor in New York City. The principal field of investigation was in the large dry goods stores and mercantile

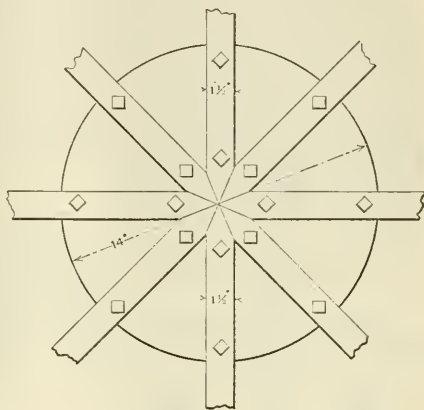


Fig. 3.—Front Elevation of Shaft Flange.

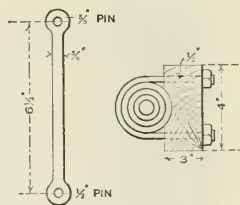


Fig. 4.—Connecting Rod and Flange Bearing.

from their standpoint there is no necessity for the employment of girls under 14 years of age, and they suggest for consideration on the part of the Legislature the enactment of a law preventing the employment of children under that age. The committee found that the sanitary conditions and arrangements of the various mercantile establishments are on the average fair, though violations of existing laws and regulations of the Health Board were discovered in some of the larger establishments. It was also found that the law requiring employers to provide seats for female employees has not been generally observed. To be of any value they recommend that this law be amended so as to make it more definite and thereby capable of enforcement. The committee's investigations are to be extended to the women employed in "sweet shops," and they state their intention of making their inquiries in this field as searching and complete as the matter demands.

PLUMBING and GAS FITTING.

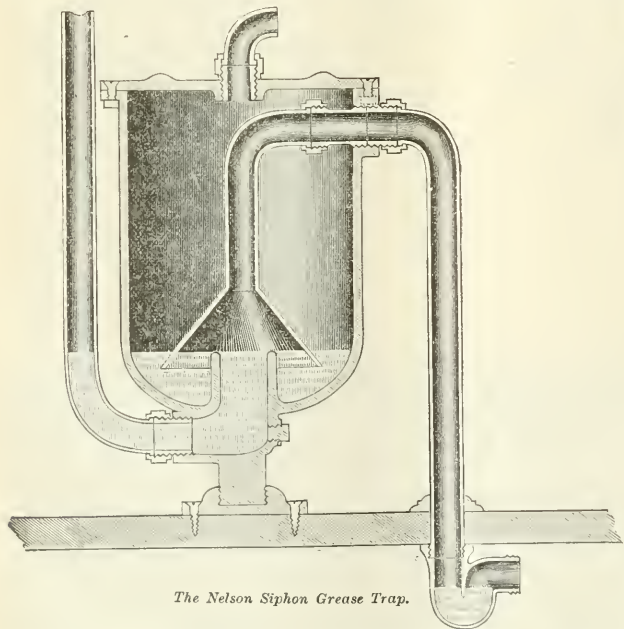
Convention Hotel and Railroad Rates.

The following letter is received from John Mitchell, president of the National Association of Master Plumbers :

It is to be regretted that the Western Lines Passenger Association has not seen fit to grant a reduction in railroad fare to delegates attending the convention. Delegates west of Chicago, Peoria, Quincy, St. Louis and Cairo will have to buy regular tickets to these points and from there buy regular tickets to Philadelphia, taking certificate for same, as explained in official notice of convention. The place for holding the convention has been changed from the Chestnut Street Opera House to the Walnut Street Theater, Philadelphia. Through an error the rate at the Stratford House was given as \$2 per day. It should be \$4 to \$6 per day.

The Nelson Siphon Grease Trap.

An attachment for the kitchen sink, designed not to trap the grease but to get rid of it without clogging the waste



The Nelson Siphon Grease Trap.

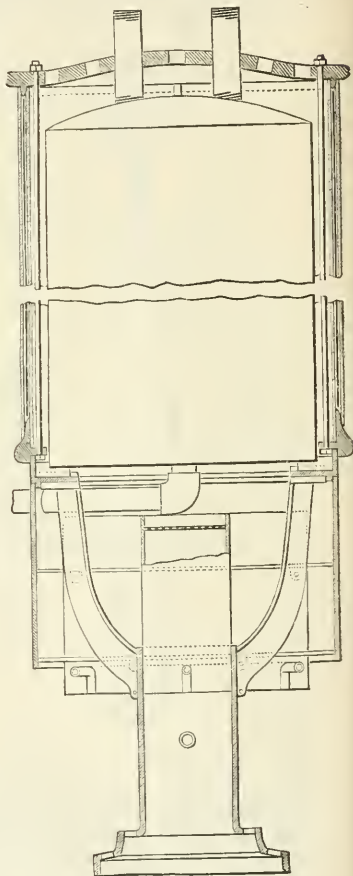
pipes, is being manufactured by the N. O. Nelson Mfg. Company, St. Louis, Mo., and is shown in the accompanying illustration. It is claimed that it requires no attention in use and that it is never necessary to open it, the construction providing for automatic flushing, which thoroughly scours the trap

and sends all the accumulation of hardened grease out of the trap ahead of the water. In operation the greasy water is discharged from the sink through the waste pipe and enters the trap and ejector at the bottom through an enlarged chamber, which is covered by the funnel shaped end of the siphon. The grease, being lighter, floats on the surface of the water within the funnel, and as the body of the ejector fills with water the grease is cooled and rises in the siphon until a siphonic action is started, when the grease is forcibly discharged into the drainage system, which is thoroughly scoured by the water that flows immediately after. With frequent discharge the deposit of grease is so small that its accumulation on the inner surface of the pipes is hardly possible.

The Stewart Water Heater.

The illustration herewith shows a sectional view of the Stewart water heater, made by the Stewart Mfg. Company, 4-6 Avenue A, Newark, N. J. The heater consists of a stand and jacket. The stand is of standard height and can be used under any size of boiler and in connection with or separate from

be used as required. The heat strikes the bottom of the boiler and then passes up and around the surface of the boiler to the top, where it may be carried to a chimney or allowed to escape in the room. It is stated that 35 gallons of water can



The Stewart Water Heater.

be heated to the boiling point in two hours with a consumption of 30 feet of gas, after which it may be kept at about the same temperature with the use of 6 feet of gas per hour, allowing 3 gallons of water to be drawn every hour if required. It is claimed that 35 gallons of water hot enough for a bath can be furnished in 30 minutes. The jacket is said to conserve the heat when the boiler is used in connection with a range and water back. By running one burner it will also prevent the danger of freezing when there is no fire in the range in the winter season.

a range and water back, requiring no alterations in the plumbing work. The jacket consists of two shells, with a filling of asbestos between them, which cover the entire boiler, leaving a space of 1 inch between the boiler and the jacket. The stand has five gas burners attached to it, one or all of which can

The Vulcan Instantaneous Water Heater.

The illustration herewith shows the Vulcan instantaneous water heater, made by the Shipman Engine Manufacturing Company, Rochester, N. Y. The heater is designed to supply hot water for use where there is no coal fire or water back and boiler, and is adapted to be attached directly to the house service pipe, being constructed strong enough to withstand the pressure carried by the ordinary water works system. It is stated that it is adapted for the use of either artificial or natural gas and that a burner

from Valentine Weiner two lots across Jay street from his present location, on the corner of Fifth and Jay, for \$11,000. Mr. Trane will erect here a fine new brick building for the accommodation of his extensive stock of plumbing fixtures and his shops.

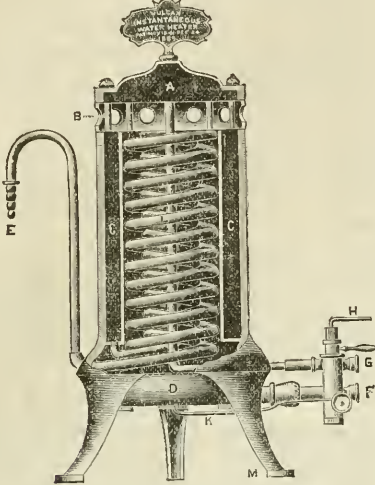
Massachusetts Plumbing Law.

The attack that is being made on the present plumbing law in the Massachusetts Legislature deserves to fail of its purpose, says a writer in a New England paper. This law requires that all cities and towns of the State

which is being fitted for their occupancy. The new concern will manufacture a special line of plumbers' goods and handle the finer grades of supplies. In addition to the well known inventions of Mr. McHugh, the new company will exploit some entirely new plumbing appliances which will be known as the Model line, notably a ball cock, wash down closet and lavatory, and a special feature of the business will be solid porcelain bathtubs and sinks. This company will also manufacture and sell the Union expansion bolt. P. J. Lynch, who will be general manager of the company, has been identified with the plumbing business for a decade, originally with Wm. H. Doyle, a prominent plumber of Philadelphia, and later with C. A. Blessing of that city, from which position he came to Boston to manage the Deeco business at 146 High street, Boston. Mr. Lynch has had wide experience at both ends of the trade, and brings to his new connection expert knowledge of sanitary appliances, practical business ability and the good will of the entire trade.

The Bray Pipe Hanger.

The illustration herewith shows a new pipe hanger put on the market by C. A. Bray, 155 Elliot street, Boston, Mass. After the shank has been secured into the ceiling the length of the hanger may be adjusted by turning the flange, which works on the lower end of the screw, enabling the hanger to be adjusted so as



The Vulcan Instantaneous Water Heater.

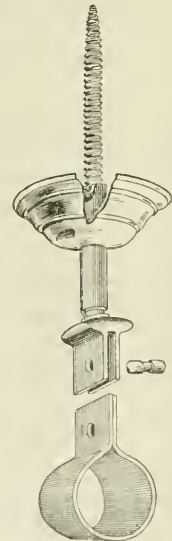
can be furnished for using gasoline. The gas burner is located under the heater, as shown, and furnished with a pilot light which is kept burning continuously. The main gas supply cock is connected with the water supply cock, so that when one is turned on both are opened. The temperature of the water naturally is governed by the quantity which passes through the heater, and a special cock is arranged for controlling the main so that it is possible, when desirable, to generate steam for the cleansing of bottles when used at the hotel or restaurant bar. In construction the heater has a water jacket connected with a water dome at the top, and the water to be heated passes up through a pipe in the center to the water dome and is carried from it to the water jacket by a series of pipes. The water, having become partially heated, is now raised to a higher temperature by passing from the water jacket into a coil which runs spirally to the top of the heater, and then passes into a downward flowing spiral coil to the outlet, which, after passing outside of the heater, runs up near the top of the heater and again turns down. This arrangement leaves the heater full of water, so that should the gas burner be kept in operation when the water supply is shut off the heater cannot be destroyed. The water dome and water jacket are both made of cast iron, while the heating coil is made of steel tubing, and all parts are said to be thoroughly tested previous to leaving the factory.

JAMES A. TRANE, La Crosse, Wis., the well known plumber, has purchased

of 5000 inhabitants or more shall have a board of examiners of plumbers and of inspection of plumbing, and that all plumbers who propose to engage in the business, whether as master plumbers or journeymen, shall first procure a certificate as to their qualifications for such business. This law has been in operation for two years and a higher standard of plumbing work has been secured. Under its provisions it is impossible to put in the poor material or poor workmanship that was supplied prior to the enactment of the law, and the public health and welfare have thus been protected and promoted. It is now proposed to make the acceptance of this law, in some localities, optional instead of mandatory. It ought to be apparent that such an amendment would tend to defeat the excellent purposes which this legislation was designed to accomplish.

Model Manufacturing Company.

P. J. Lynch, until very recently manager of Deeco Company's Boston branch, has associated himself with T. J. McHugh, well known in the plumbing trade as an inventor of plumbing appliances, formerly connected with Wm. H. Ward & Co., and more recently with the Sanitas Mfg. Company, also with Frank Grady, who is a practical man in the business, and will form a stock company under Massachusetts laws as the Model Mfg. Company. They have leased the four story building 128 and 130 Oliver street, Boston, Mass.,



The Bray Pipe Hanger.

to give the desired pitch to a pipe supported by it. The flange also makes a finish against the ceiling. The loop or band which secures the pipe is then attached to the stem by a pin, which has a groove in the center, enabling it to remain securely in place. It is claimed that this hanger can be quickly adjusted to the work and that the bands for the piping can be readily cut from metal strips with the Champion clamp machine manufactured by Mr. Bray. This machine is arranged with a scale showing the exact length required for a band for lead and iron pipe and brass tubing of different diameters, and will punch the necessary holes for securing the band, and will also bend the band in the proper shape.

Hudson County, N. J., Plumbers.

About 40 master plumbers from different sections of Hudson County, N. J., got together at Groeschel's Hall in Jersey City last week and organized the Master Plumbers' Association of Hudson County. These officers were elected:

Edward Moore, president.
Louis A. Menegaux, first vice-president.

Joseph Duff, second vice-president.
Charles Sulk, third vice-president.
Charles T. Miller, 126 Congress street, corner of Central avenue, secretary.
Charles H. Orriss, financial secretary.
W. J. Cross, treasurer.

Charles Wagner, sergeant-at arms.
Assemblyman Blackshaw, Messrs. Kelleher, Zumbusch, Miller, Ewald, Sulk, Coulson, Menegaux, Cross and McDonald were appointed a committee on trade and resolutions. Messrs. Steinhoff, Ewald, Renker, Breyer and Andre were appointed to draw up a constitution and by-laws. The association will meet on the second and fourth Tuesdays of each month at Groeschel's Hall. President John H. Mitchell of the National Association will address the association at an early meeting.

TRAPS AND VENTS.

J. FRANK KERTZ has removed his plumbing establishment to the building vacated by the Y. M. C. Association, 318 Warren street, Hudson, N. Y.

L. L. VICKERS will remove his plumbing shop to 12 East Main street, Salem, Ohio.

Geo. H. BURGE, Bay City, Mich., practical plumber, steam and gas fitter, has bought out the Walther plumbing establishment, located on Midland, between Catharine and Dean streets.

THE FOLLOWING were appointed as sanitary inspectors by Mayor Myers of Savannah Ga.: Northern division, W. H. Peck; southern division, Geo. W. Allen; eastern division, Alex Mendel; western division, Chas. A. Gradot. The appointments went into effect May 1 and continue until November 1, the salary being \$50 a month.

JOHN MURPHY has opened a pipe fitter's establishment on Central avenue, Dover, N. H.

TWO CANDIDATES took the journey-men plumbers' examination at Springfield, Mass., under the charge of F. W. Tower, city inspector. The examination was divided in two parts, practical and theoretical. The practical test consisted mainly in joint wiping. The candidates were asked questions on the theory and best methods of doing certain kinds of plumbing work. A standing of 75 per cent. is required to pass the examination. The Mayor and the Building Inspector are members of the examining board. The two candidates examined are graduates of the plumbing class of the Industrial School.

JOHN A. JENNINGS of the Health Department, Brooklyn, N. Y., speaking for William S. Johnston, the Sanitary Engineer, makes the following remarks on the new plumbing regulations which go into effect May 15: "The only marked difference between the rules we are now working under and the new ones is that formerly the plans and specifications for new plumbing or extraordinary repairs to old houses were submitted to the department in a rough state, while now it is

required that all such plans be drawn to scale. Hereafter, too, the plans are to be submitted by the architect, owner or builder, and not by the plumber. The object of the change is to get the plumbing of a house down to a statistical basis, so that intending purchasers when they come to make inquiries of this department will know just what the sanitary arrangements of the house are. In other words, the Charter law, requiring all alterations to plumbing of any magnitude to be approved by the Health Commissioner before being made, is now for the first time being enforced. Repairs or minor alterations do not come under the heading of the law which I, with others, deem to be of decided benefit, not only to the people, but the plumbers. All these rules before their adoption were submitted to the City Works Department, as well as to the Master Plumbers' Association, and the small modifications made in them when they were sent back were adopted."

J. B. McLAREN has left Muskegon, Mich., for Springfield, Mass., to accept a position with the P. P. Emery Mfg. Company, brass founders and copper smiths, of that city.

BEHRENS & REEK have removed their stock and plumbing shop to 1220 N. Eighth street, Sheboygan, Mich.

SUPT. W. A. EDWARDS, Coxsackie, N. Y., has his time quite fully occupied in attending to the tapping of the mains and overseeing the putting in of water nowdays. There is a constantly increasing number of water takers.

The Metal Worker is indebted to Geo. S. Bull, corresponding secretary of the Master Plumbers' Association of Hartford, Conn., for a list of officers elected at their meeting last week. The officers are: President, Edward Mahl, 666 Main street; vice-president, James F. Duffy, 124 Main street; corresponding secretary, Geo. S. Bull, 189 Main street; financial secretary, Chas. Murry, 121 Main street; recording secretary, J. hn J. Lawler, 548 Asylum street; treasurer, Edward Lawler, 160 Main street; Sergeant-at-arms, John Smith, 18 Ford street. The delegates to the national convention in June, at Philadelphia, are Edward Mahl, president, and James Ahern, ex State president.

HYGIENIC APPLIANCE COMPANY of New York City has been chartered to manufacture and sell commodos and closets; capital, \$10,000, and directors, Sherwood Gillespie, Samuel Oppenheim and U. A. Elsbeg of New York City.

THE BUSINESS of the late firm of Carl & Hall, North Tarrytown, N. Y., is now conducted by S. L. Hall, who is prepared to do plumbing, steam and gas fitting, tin, copper and sheet iron work.

THE E. STEBBINS MFG. COMPANY, Springfield, Mass., report increasing sales of their Stebbins special compression and Broughton self closing work among the plumbers of the United States and the Provinces. We understand that their lawn sprinklers, the Little Giant traveling and the Twin Comet stationary, are attracting much attention and find ready sale everywhere. All departments of the works are running full force, and there is every indication of a large year's business. C. J. Hills of Cleveland and A. S. Hills of Philadelphia have taken an interest in the company and will share with Major

Brewster the management of the company's affairs.

GEORGE D. KIMBER of Brooklyn was instantly killed last Tuesday evening by a fast express train, at Bridgeport, Conn. He started to cross the tracks and, apparently, becoming confused stepped directly in front of the train. The locomotive and entire train passed over him, cutting the body into pieces. Mr. Kimber was well known in the hardware trade in New York and Brooklyn as a wholesale dealer in plumbers' materials.

F. J. REYNOLDS, Ansonia, Conn., will attend the plumbers' convention at Philadelphia and will probably be a delegate, as he was named as an alternate at Waterbury.

FRANK E. DWYER & Co have rented the store of W. C. Mills, 8 Middle street, Gloversville, N. Y., where they will open a plumbing, steam and gas fitting establishment.

THE FOLLOWING PLUMBING ESTABLISHMENTS have recently been established in Chicago: Brill & Rosenwald, 277 Thirty-fifth street; Peier King, 1515 West Lake street; Ralder Moe, Windsor Park.

THE HENRY MCSHANE MFG. COMPANY have about finished work on their new plant at Dunkirk, Md. About 400 men will be employed, and it is expected that the works will have a melting capacity of from 75 to 100 tons of iron daily and will be in operation in about two weeks.

AT CAMBRIDGE, MASS., last Saturday a number of the inspectors of plumbing of the cities and large towns of the State met in City Hall and formed a temporary organization, with P. P. Connealy of Watertown as president and W. H. Ford of Cambridge as secretary. The meeting adjourned to meet June 8, at Worcester, when the temporary organization will be made permanent.

J. J. MURPHY has opened a plumbing establishment on Central avenue, Dover, N. H. In addition to his plumbing business he has put in a stock of stoves and ranges.

THE MASTER PLUMBERS OF TEXAS will meet in Austin on May 13 and will, among other things to be done, elect delegates to the national convention in June. Dan F. Sullivan of Dallas and his associates will strive to secure the next national convention of the master plumbers for Dallas, and say this can be done with a little effort, as that convention is expected to meet in Texas. The San Antonio plumbers are with the Dallas plumbers in this movement and doubtless, as Dallas is the first Texas candidate that has spoken, all the other master plumbers of the State will pull with them.

CHAS. J. & F. E. TAYLOR, plumbers, have moved their establishment from South Allegheny street to High street, Bellefonte, Pa.

AT A MEETING of the Board of Health of Springfield, Mass., on Tuesday, plumbers' licenses were granted to John Oimette, 354 Water street, and Ferdinand J. Gast, 582 Main street.

A. A. MORTON, a Boston dealer in plumbers' and steam fitters' supplies, was a visitor among the New York trade this week.

A HANDSOME ARRAY of brass signs may be seen on either side of the entrance at 92 Water street, with the

word Rome at the top. Beneath are the signs of R. M. Wilson, Rome, N. Y., manufacturer of plumbers' specialties, and of the Rome Mfg. Company, who make copper tea kettles, wash boilers and copper household utensils and stove fixtures. At the bottom is the name of the Rome Brass & Mfg. Company, who make curtain poles and all kinds of brass decorations for upholstery.

JOHN D. SWINTON of Swinton & Co., Port Jervis, N. Y., was a visitor among the plumbing and heating trades in New York this week.

THE BOARD OF HEALTH of New Bedford, Mass., are issuing their recently adopted plumbing regulations, in the form of a pamphlet of 16 pages, and through their courtesy a copy has been forwarded to *The Metal Worker*. The regulations require that only cast iron soil pipe shall be used in buildings; that the front wall trap shall have a fresh air inlet on the house side; that no water closet shall be flushed directly from the house service; that only porcelain lined, cast iron traps shall be used in connection with the closets, and that a plan shall be filed with the Board of Health for all alterations to plumbing systems.

A SERIOUS FIRE which occurred in the store of the Nason Manufacturing Company, 71 Beekman street, New York, on Sunday last caused some slight damage to the stock of the Haydenville Mfg. Company next door, through water and the breakage of glass. Owing to the premises of the Haydenville Mfg. Company being protected by iron shutters no actual damage by fire happened, although the concern have been put to great inconvenience through the destruction of their elevator, which worked between the two stores. The company report a very heavy demand for their specialties in steam and hot water and plumbing goods. Their factory at Haydenville, Mass., has been kept running night and day to its fullest capacity, with a force of 275 men, during the last two months, and they are still behind in their orders. The firm report that during the month of April, the volume of orders filled by the concern was larger than ever before in any month of their history. Some new lines of goods are preparing and will be placed on the market before long. The company have recently been reorganized, the following being the present officers: H. H. Beals, president and treasurer; L. H. Beals, vice-president, and R. C. Wilson, secretary. The last named has for several years represented the interests of the company on the road.

A Pittsburgh dispatch states that some large importations of colored men from Virginia, for work in the mines in place of the striking miners, have lately taken place in the Pennsylvania coal region.

A special feature of the forthcoming exhibition at Bordeaux, France, will be the largest bottle ever made. It is to be 115 feet high and divided into a number of stories, in the lowest of which there will be a restaurant. A winding staircase will lead up into the neck, in which will be situated a kiosk, taking the place of the cork, where there will be room for 35 persons to sit and observe the exhibition grounds and the city.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

WM. B. ROTHSCHILD is to build a new residence at Hartford, Conn., to cost \$8000, which will have a heating system and a fine grade of plumbing work.

FRED. LEWIS, New Haven, Conn., is to erect a new residence, in which Arnold & Co. will do the plumbing and install the hot water heating system.

THE CITY PROPERTY COMMITTEE of Rochester, N. Y., have been given authority to advertise for bids for the plumbing of the City Hall building, the work to be done under the supervision of Plumbing Inspector Smith and according to plans to be prepared by the inspector.

W. A. EDWARDS, Cocksackie, N. Y., has just completed a system of hot water heating for Hiram Brown and Dr. A. Beach, using a No. 8 Victor boiler. The trial, it is reported, showed a good circulation in all of the radiators in five minutes after the match was applied. P. C. Antonides, who has had a large experience in plumbing and heating in cities, did the fitting, and has made arrangements to remain permanently with Mr. Edwards.

THE ITHACA PLUMBING & STEAM FITTING COMPANY, Ithaca, N. Y., have the contract for plumbing work at the Cascadilla School dormitories.

BISHOP TIERNEY has awarded the contract for furnishing the steam heating apparatus for the Home for the Aged and Infirm at West Hartford, Conn., to Albert B. Franklin of Boston, his bid being \$3920.

THE CONTRACT was awarded by the school trustees to Clarke Potter of Wickford, R. I., to furnish a Victor heater connected with the coil system for \$532, for heating the school.

A. V. FETTER, La Crosse, Wis., has been awarded the contract for the heating apparatus for the High School at \$2469, and James A. Trane the Redfield Street School Building at \$3476.

THE CITY COUNCIL of Pawtucket, R. I., have passed an ordinance appropriating \$2384.75 to cover the expenses incident to changing the sanitary conditions of the Grove Street and Church Hill school houses.

THE FIRM of Cully & Lewis, plumbers, of Livingston, Mont., have secured the contract for the extension of the sewer and water mains at Port Yellowstone.

ROBERT M. JACK & SONS of Jackson, Mich., were the lowest bidders at \$21,000, and were awarded the contract for the interior finish, plumbing, &c., of the Federal Building at Columbus, Ga.

JAMES CURRAN & CO., New York, have been awarded the contract for the heating apparatus of the addition to the Government Building in New Haven. The price is \$4150.

E. W. HOLMES, Montello, Mass., has the contract for the plumbing and heating of the new Ackerman Block, on Spark street.

J. F. AHERN of D. Ahern & Son, Fond du Lac, Wis., is at Green Lake, Wis., superintending an extensive job of plumbing and putting in a gas machine in the summer residence of N. D. Thompson, the wealthy St. Louis publisher.

JOHN MARKEY, 2925 Cottage Grove avenue, Chicago, has the contract for the plumbing and drainage in the four store buildings of W. V. Nickols, 2821 to 2827 of same street.

JOHN H. SULLIVAN, 328 East Division street, Chicago, is to do the plumbing and drainage in the flat building of A. Swanson, 130 Vedder street.

FRANK J. RICH, 1204 Diversy street, Chicago, has the contract for the plumbing and drainage in the flat building of G. Fuchs, Lincoln and Graceland avenues.

THE J. F. ALLES PLUMBING COMPANY, 233 Lincoln avenue, Chicago, have the contract for the plumbing and drainage in the flat building of H. Witt, 1049 Norwood avenue.

THOMAS & ANDERSON, 118 North Centre avenue, Chicago, are to do the plumbing

and drainage in the three flat buildings of E. Berndt, Hamburg and Lepson streets, and in the store and flat building of E. Lundren, 388 Fullerton avenue.

HENRY BAUER, 232 North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of E. H. Knoop, 1712 Sheridan Boulevard.

H. BREYER, Jr., 1725 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the residence of M. J. Cooley, 224 Myrtle avenue.

FRANK FALK, 729 Milwaukee avenue, Chicago, is to do the plumbing and drainage in the flat building of J. C. Knutson, 269 West Chicago avenue.

CHARLES UHER, 524 West Eighteenth street, Chicago, is to do the plumbing and drainage in the apartment building of J. Kertes, Van Horn street.

THOS. O'DONNELL, 738 Seventy-ninth street, Chicago, has the contract for the plumbing and drainage in the flat building of C. L. Barton, 6454 Greenwood avenue.

R. J. KNIGHT, 806 Third-first street, Chicago, has the contract for the plumbing and drainage in the flat building of D. M. Hayes & Co., 1397 Fulton street.

THOMAS & ANDERSON, 1525 Milwaukee avenue, Chicago, are to do the plumbing and drainage in the flat building of C. Rolandsen, 777 Davis avenue.

ERNEST GARNER, 1740 Milwaukee avenue, Chicago, has the contract for the plumbing and drainage in the residence of W. L. Johnson, 223 Laurel avenue.

THE CONTRACT for building the Albert Lea Opera House at Minneapolis, Minn., has been awarded without the heating and lighting contracts.

THE BRIDGEPORT STEAM HEATING COMPANY, Bridgeport, Conn., have secured the contract for placing a Gurney hot water heating system in the residence of Charles Judson, Stratford.

E. A. VALQUETTE, practical plumber and dealer in supplies, Rutland, Vt., will do the plumbing and put in the heating outfit for the new addition to the Berwick House, that city, which will include extensive baths.

Experiments with Sheet Aluminum.

Crosier, Stephens & Co. of Newcastle-on-Tyne, England, have lately made some interesting experiments with sheet aluminum, weighing 97 grams per square foot, the results of which are tabulated in the London *Ironmonger*. In all these experiments the aluminum sheets were immersed in the liquid named for the time specified, and were then carefully cleansed and reweighed. The loss of weight is, for the sake of comparison, stated upon 1 square foot of surface:

	Number of days.	Loss in grams.
Distilled water.....	15	nil
Water supplied by company.....	15	0.0000
Solution of salt, 2 per cent.....	15	0.0450
Infusion of:		
Tea.....	15	9.6270
Coffee.....	7	0.0270
Cocoa.....	15	0.0390
Draft ale.....	7	nil
Draft porter.....	7	0.0360
Solution of:		
Citric acid, 1 per cent.....	7	0.0450
Tartaric acid, 1 per cent.....	7	0.0720
Oxalic acid, 1 per cent.....	7	0.3690
Borax.....	28	0.006
Olive oil.....	28	nil
Bottled cider.....	29	0.009
Milk.....	29	0.009
Golden syrup.....	23	nil
Cognac.....	23	0.081
Demarara rum.....	23	0.089
Irish whisky.....	23	0.045
London gin.....	23	nil
Port.....	23	0.099
Sherry.....	23	0.189
Curc.....	23	0.027
Hock.....	23	0.045
Aerated waters.....	23	nil

Among the captures made by the Japanese troops at Port Arthur were the rails for the construction of 120 miles of the Tientsin and Moukden Railway.

ROOFING AND CORNICE.

Combination of Vermont Slate Manufacturers.

The condition of affairs in the Vermont roofing slate trade has been for some time far from satisfactory. Since the dissolution of the old combination of manufacturers prices have become more and more demoralized, until lately quarrying is said to have yielded little or no profit to the operators. To remedy this evil a new combination was effected last week, which, with one exception, embraces all the Vermont slate concerns, some 25 in number. The association was organized under the name of the Vermont Slate Company, with main office at Granville, N. Y. A secretary and manager was appointed and a board of directors elected. The combination, it is declared, is not formed for the purpose of obtaining high prices, but solely to secure stability and regularity in prices, so that roofers throughout the country may know exactly what they will be required to pay for sea green roofing slate. A new list of prices was drawn up and unanimously agreed to, which, while somewhat higher than the cut rates lately in vogue, is substantially lower than the scale ruling at the close of 1893. According to the agreement, subscribed to by the members, all business must be done through the main office, where all orders received by the several concerns will be periodically filed, and the central office will apporportion the production.

The outside business is limited to four wholesale dealers, who will represent the combination. They are John Galt & Sons of New York City, David Smith and Gilbert Snyder of Zanesville, Ohio, and J. M. Hochstetter of Sugar Creek, Ohio.

The new arrangement is said to have given great satisfaction to the trade and a good business is looked for in the coming month. All the Vermont quarries are in full operation, with a growing and improving volume of output. Export business of a very encouraging character is being done with Australia, South Africa and the British West Indies.

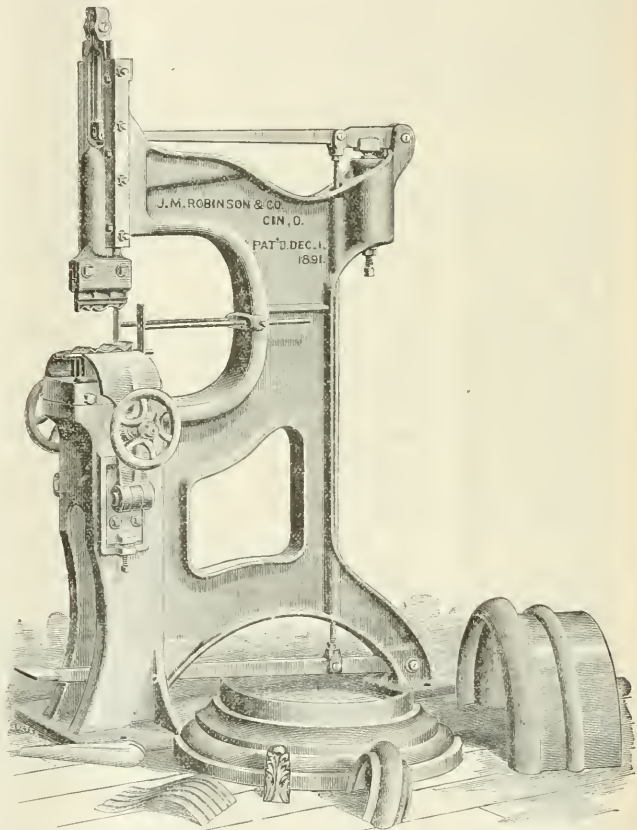
PEDEN & Co., dealers in roofing material of all kinds, Houston, Texas, made announcement under date of April 30 that they had decided to concentrate their entire business at Houston and would not carry any stock in Fort Worth after May 1. Their Houston stock will on this account be larger and more complete than ever before, so that they will be able to supply all orders promptly. They mention that their facilities for

shipping are most excellent, and they appeal particularly to the trade in North Texas. Their location in Houston is 1013 Franklin avenue.

Foot Power Curved Molding Machine.

J. M. Robinson & Co., Cincinnati, Ohio, have put on the market a foot power curved molding machine, a gen-

give to the hammer the desired movement. To the body of the machine immediately under the hammer the die chuck is secured, in which the three dies are fitted and held in position by means of clamps operated by hand wheels, shown in the illustration. The bottom ends of the dies are fitted into the adjustable jaws of the chuck, and are adjusted by means of screws to suit the formation of large or small circular



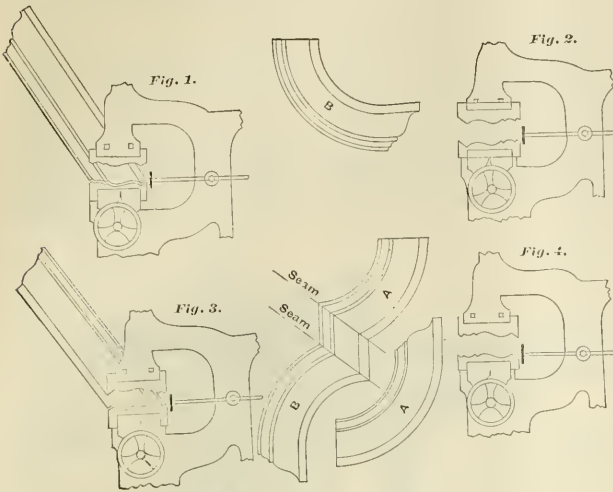
Foot Power Curved Molding Machine.

eral view of which is illustrated in the accompanying cut. The sheet metal molding seen in the foreground shows the product of the foot power machine, the engraving having been made from a photograph. The body of the machine, it will be noticed, is in one casting, giving, it is pointed out, strength and solidity. The hammer is fitted to and operated between gibbed slides secured to the upper projecting portion of the body and operated by means of connections to the foot treadle, on which an alternating pressure of the foot will

moldings. The top die is secured to the face of the hammer by means of slide clamps. The gauges in the rear of the bottom dies are adjustable, to suit the widths of the sheets being formed. In operating the machine a downward pressure of the foot on the treadle causes the hammer to strike a downward blow. On releasing the foot pressure, and without removing the foot, the hammer will rise by means of a spring acting on the hammer handle between the treadle attachment to the handle and the fulcrum, to which the rear end of

the handle is attached by means of a pin on which it rocks in the reciprocating vertical movement of the hammer. The power of the spring can be increased or diminished by means of a set screw immediately under the spring pocket. The set screw is provided with a lock nut so as to prevent movement

J. M. Robinson & Co. manufacture a similar power curved molding machine. The frame is likewise in one piece, the motion being communicated from a driving shaft and the striking power of the hammer regulated by foot pressure on a treadle. The weight of this machine is 1500 pounds.



Different Moldings Made with One Set of Dies.

while the hammer is in motion. The alternating foot pressure on the treadle with the action of the spring gives the required motion to the hammer. The speed and striking power are governed by the slow or quick movement of the alternating foot pressure on the treadle, which is located near the base of the machine at the front. In forming up sheet metal molding the sheets are first cut to the proper shape and size. They are then placed against and guided

From the instructions for operating these curved molding machines published by J. M. Robinson & Co. we quote the following, which will be of interest, together with illustrations of the use of the machine.

The principal features of the curved molding machine are the hammer, chuck and dies. The dies are made of cast iron, the surface of which is of a suitable shape to correspond to the molding to be formed, and the

the circular form to the molding. The center die is rigid, while the other dies, one on each side, are pivoted to and turn on the center die. The hex-head screws, two of which are on each side of the chuck on the ends of which are nuts, interlocking with base of die holders, and by movement of the hex-head screws in either direction will cause the die holders to move as required, thus changing the position of the die on either side of the center die and giving the required curve to the mold in process of forming. Movement of the hex-head screws will cause the top surface of dies to move in one direction and the bottom in an opposite direction, thus increasing or decreasing the circle of the mold. The nearer the three chuck dies stand to a perpendicular line the larger will be the circle; in fact will be very near straight when dies are perpendicular. Six dies constitute a set, four of which are used at one time; the remaining two are used for changing the shape of moldings; thus, by taking the dies out of chuck and hammer, place one die from chuck in hammer, the other two, with one from hammer, place in chuck, thus producing the changes, as illustrated in Figs. 1, 2, 3 and 4. We furnish with each machine five sets of dies, or 30 in all, with which all changes can be made that will produce 20 different kinds of moldings, embracing about all in general use.

In Figs. 1, 2, 3 and 4 are illustrated the sectional part of the curved molding machine in which the dies are secured, as well as four different moldings made with the one set of dies changed as shown in the illustration. The position of the dies in Fig. 1 produces the molding shown between the dies. Molding B is formed with the same dies changed around as shown in Fig. 2. The molding A is formed with the same dies as shown in Fig. 4. Fig. 3 exhibits another molding formed with the same dies changed as illustrated. With the illustrations and explanations it will be seen how four different kinds of moldings are made with one set of dies. The accompanying illustration shows six different kinds of moldings, all of which have been produced with a foot power curved molding machine. As will be observed, there are six moldings, lettered A, B, C, D, E and F, each of which presents a different figure and are marked with the word "Seam," thus showing each section of the molding to be made on the machine, then joined at the word seam, thus completing the figures as per above illustrations. Figures, indicated by numerals 1, 2, 3, 4 and 5, illustrate the dies with which to form Figs. A to F in sections, as noted by the word seam. Figs. E and F are formed with Nos. 3, 4 and 1 dies. Figs. C and D with Nos. 1 and 2. C (2 size) with No. 1. Figs. A and B are formed with Nos. 1 and 5 dies. We find it a difficult matter to draw larger than a 2½-inch round; this can be done on large sweeps.

The 2 inch can be drawn as small as 30 inch diameter. If a larger one-half round is desired then use two one-quarter rounds and seam them as shown in D and E; by this method any size circle desired can be formed, provided the dies are of the size required; if not, then make a set of hardwood dies.

The best plan to make the one-half round—so we are informed by an expert—is to form the piece on a corncob brake first, then draw it gradually until the required radii or circle is obtained. For forming leaves and other ornaments on our curved molding machine, first procure a sample of such ornament,

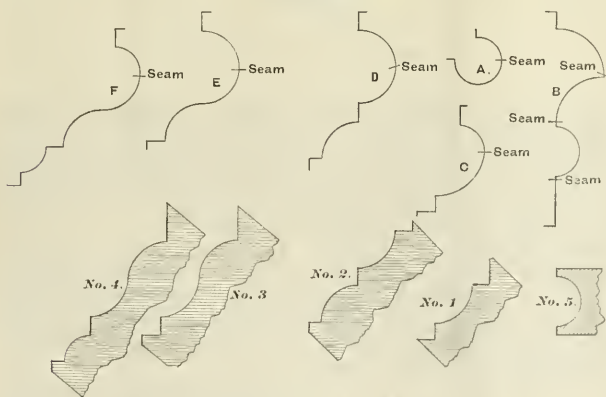


Illustration of Six Different Moldings.

along the gauges, and slow and light blows struck with the hammer for the first passage of the sheet over the dies. This makes a slight indentation, which will serve as a guide and enable the operator to hold the sheets in place, when the blows of the hammer may be increased as the operator may think best. The shipping weight of the foot power curved molding machine is 900 pounds.

dies are secured to the die holders by means of a projection on the base inserted into a counterpart of the same in the top surface of the die holders. There are three dies in the chuck. The center die, together with a die of the same kind secured to the hammer and with the action of the hammer, forms the molding. The die on each side of the center die is adjusted with a circular movement, and with the action of the hammer gives

from which make a plaster of paris mold and back it with wood, thus forming a pattern from which to make a cast iron die, which will do for a bottom die. To obtain a top die, cast to bottom die; composition, nine parts block tin, one of lead and one of antimony, or all zinc will do when there is not much use for such dies, with backing so as to clamp in hammer.

Tinsmithing, Roofing and Cornice Class.

Last year it was the intention of the trustees of the New York Trades School to start a class in tinsmithing, roofing and cornice work. All arrangements were completed to this end, but the class was not started owing to a lack of applications for instruction. This is to be regretted, as the preparation to work in all trades that have been taught at the school has proven highly valuable to those who have attended the school. It is suggested that the class might prove more successful and accessible if it was started as a night class. This would be an advantage to young men in the immediate vicinity of New York City, but to a large extent would prevent young men from a distance securing the benefit which may be looked for in attending a course of instruction at this institution.

It is the intention of the management not only to give instruction in the manipulation of the tools and in the shaping of the metals, but to give instruction also in the cutting of patterns and in the laying out of all of the work that would naturally come up in the trade. Already the demand for cornice makers who can draw patterns and lay out work exceeds the supply, and the young man who receives his certificate after a course of instruction in this class will have made a long step in the right direction, although it is improbable that he would be capable of filling so responsible a position as the pattern cutter in a cornice shop. The opportunities for young men to get such information in the average shop are very rare, as the methods of modern trade do not warrant the employer spending any considerable time in the instruction of his young workmen, and those who succeed in acquiring proficiency do so as a result of their personal energy rather than as a result of the instruction which they receive.

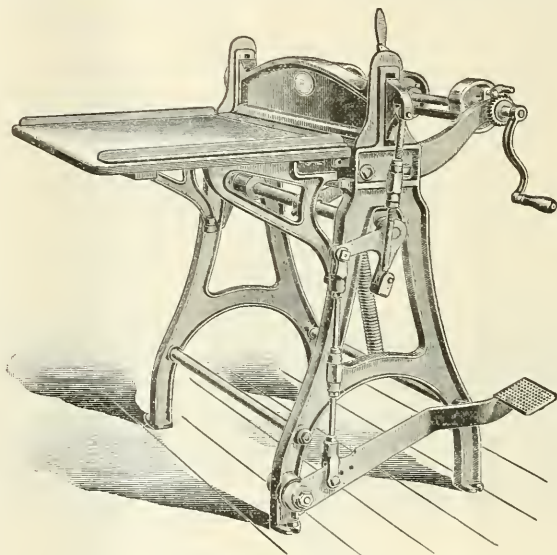
It is to be hoped that those who look forward to following the cornice business will show their interest in this class to such an extent as to warrant its being started with a large number of applicants at the opening of the next school year. Information as to the work of the school can be gained by procuring a copy of the next issue of the Trades School catalogue by filing a request for one by addressing the New York Trades School at Sixty-seventh street and First avenue, New York.

The Niagara Cross Lock Seamer.

We present in the accompanying illustration a general view of the Niagara cross lock seamer, manufactured by the Niagara Stamping & Tool Company, Buffalo, N. Y. The machine is intended for fastening together sheets of tin and rolling them up in strips ready to lay on a roof. It is described as simple, rapid and easy to operate and saving in time and labor. The seamer is constructed with a view to strength and rigidity. The pressure bar is operated by a toggle movement connected with a foot treadle and the seam produced at one depression of the treadle is said to be perfectly tight and uniform the entire length. Side gauges are provided on a drop table and the sheet is held in proper position between

orandum pad, the same size as the calendar pad, occupying the center of the sheet, while at the side is a ruled column for a telephone index. A list of references contains the names of many important buildings in Providence, Newport, Pawtucket and other cities which have been roofed by Mr. Murphy. His principal business is slate roof contracting, but he also does fine sanitary plumbing, steam and gas fitting, &c.

THE CORTRIGHT METAL ROOFING COMPANY have removed their main office and factory from Broad and Hamilton streets, Philadelphia, to a larger and more modern building located at Twenty-third and Filbert streets, Philadelphia, where better manufacturing and shipping facilities are offered for supplying the increased demand for their well-known metal slates, Victoria



The Niagara Cross Lock Seamer.

the bar and bed by means of hinged fingers fastened to the pressure bar. These fingers move out of the way automatically when the bar is being depressed and drop down again when the bar goes up. An eccentric attachment is applied to the pressing bar to raise it sufficiently to allow the folded edge of the first sheet to pass through. The reel in the rear of the machine is controlled by a ratchet and pawl, and when the rolls are seamed, it is mentioned, can be removed without difficulty. The table is hinged to the frame, supported by brackets, and can be easily dropped down so as to occupy the least possible space. The working length is 28 inches.

FLASHINGS.

THE CALENDAR distributed by William M. Murphy, successor to Deslauriers & Co., 251 Eddy street, Providence, R. I., has some particularly serviceable features. The calendar is mounted on a large card, 11 x 14 inches in size, and carries at the bottom a calendar pad giving the days of the month. Alongside of it is printed a calendar for the year 1896. A special feature is a mem-

shingles, &c. Customers of the company and all others interested in roofing material are requested to note the change in address and are especially invited to send for their new 1895 catalogue. The Western office of the company will continue at 184 Van Buren street, Chicago, Ill.

THE LARGE CONTRACT for roofing the new plant of the Sessions Foundry Company, Bristol, has been given to F. H. Sneath of Farmington, Conn., the well known slate and tile roofer. This job will require no less than 450 tons of slate.

THE SLATE TRADE in the Bangor (Pa.) region is reported to be in a very flourishing condition, with the new association working harmoniously. The demand is keeping steady pace with the production and no stock is being piled up. The outlook is regarded as very encouraging.

THE KANSAS CITY METAL ROOFING & CORRUGATING COMPANY, Kansas City, Mo., have completed the work of removing from their old quarters, and are now located at 416 Delaware street, where they have increased facilities for

handling their business. They carry a heavy and well assorted stock of all kinds of roofing, siding and ceiling material, galvanized eave trough and conductor, roof cresting, building paper, &c. They have decorated their office with a highly ornamental steel ceiling and side wall, the general effect being extremely handsome, and is an indication of what can be done in this direction. Jerome Twitchell, president and general manager of this concern, is entitled to much credit for introducing this class of work in the West. The company extend a cordial invitation to all their friends to call and inspect their work.

THE BROWN & HARRY IRON COMPANY, successors to the E. K. Dillingham Iron Company, Houston, Texas, are sending out illustrated catalogues describing the work which they manufacture and handle. The publication shows leader pipes, miters, gutters, eave trough, ridges, conductor hooks, cresting blocks, finials, cornices, corrugated iron and other goods of interest to the roofing and cornice trade. Brief descriptions and prices are given in all cases. We learn from the Brown & Harry Iron Company that business in their section of the country is very promising, present trade being better than usual and the prospects flattering for another enormous crop throughout Texas, which they say means a big business in the fall. The announcement of the change of name was made under date of May 1, and it is stated that there will be no change in the management of the business. They mention that they are constantly enlarging their facilities for manufacturing their goods and are prepared to meet competition from any source.

SCRAP.

N. & G. TAYLOR COMPANY, tin plate manufacturers of Philadelphia, advise us that they have given up their old quarters in Water street, New York City, and have moved to the Cable Building, 621 Broadway, where they have opened new and commodious offices with a corps of assistants in charge of George Livingston, who has long been identified with the building and kindred trades of New York and Brooklyn, and who was for many years a member of the Building Commission of the Board of Education of New York. The firm also announce that they have secured larger and better warehouse facilities for the quick filling of orders. Consumers wanting the special brands of tin plate manufactured by this firm can secure prompt attention by communicating with their office at the address given.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., turned out in April a larger amount of stock than they have ever before produced during any one month in the history of the concern. Work on five new tin mills will shortly begin. The added facilities will give an increased capacity of about 4000 boxes of tin plate weekly.

THE IRONDALE STEEL & IRON COMPANY, manufacturers of tin andterne plate, Middletown, Ind., increased their working force last week from 250 to 400 men. The two new tin mills built by this concern have been put into operation.

WM. STICKTON, who has for the past eight years represented the interests of the iron and steel firm of Singer,

Nimick & Co., Ltd., of Pittsburgh, at Chicago, now proposes to give his entire attention to the business in that city of the Falcon Iron & Nail Company of Niles, Ohio, manufacturers of black and galvanized sheets, tin plate, &c.

SPEIDEL & REPER, Reading, Pa., manufacturers of Speidel's economic safety hoist, have recently supplied eight of these appliances, of 4000 pounds capacity each, to the Beaver Tin Plate Company, Lisbon, Ohio; one of 30,000 pounds to the Ohio River Sheet & Tin Plate Company, Remington Station, Pa., and two of 2000 pounds to the Conshohocken Galvanizing Company, Conshohocken, Pa. The Speidel hoists have been used for years in the galvanizing and annealing departments of a number of the leading works of the country.

THE LATEST ADVICES from England indicate that more than half the number of Welsh tin plate mills are still idle, and that the orders now being booked are only sufficient to keep the working mills going from hand to mouth. The orders in hand are said to be principally for odd sizes and small quantities. The prospects are regarded as anything but cheering and a further stoppage of works is contemplated.

THE TIN PLATE WORKS of the Licking Rolling Mill Company, Inc., Covington, Ky., have been in operation for the past month, making a fine quality of tin andterne plate. The concern have in operation one tin mill and are turning out 7 1/2 tons of black sheets daily, which they use in the manufacture of finished plates. Two more mills are building. They have at present two tinning sets, and propose, as their trade increases, adding materially to their capacity. The brands produced at present are: J. D. L., a bright charcoal plate; Cin'ti, a coke tin, and Licking, aterne plate. The officers of the concern are I. Droege, president; F. J. Droege, vice-president; John C. Droege, treasurer, and B. Macke, secretary.

CONSIDERABLE dissatisfaction is said to exist in the Welsh tin plate market in regard to the new Board of Control which has been established in South Wales to restrict the making of tin plates, and, by limited production, to endeavor to raise prices. It is asserted that comparatively few firms have given in their adhesion to the body, and it is freely predicted that the board will not last out the year. Internecine strife among the Welsh manufacturers appears to have as much to do with the present demoralization of the British tin plate market as the shrinkage in demand from the United States. English trade journals are unanimous in recommending that employers and employed should make every endeavor to arrive at some suitable basis of understanding so that they may present a united front, and in this manner push their trade. This is regarded as the only way out of the present depression.

THE NEW PLANT of the Beaver Tin Plate Company, Lisbon, Ohio, is now in full operation, and the quality of the product is all that could be desired. This concern have a very complete plant, containing all modern equipments. C. W. Bray is president and S. M. Scott, secretary and treasurer.

THE REPORT that the Monongahela Tin Plate Company, Pittsburgh, Pa., have placed an order for a large pickling machine with the Anderson Foundry and Machine Company of Ander-

son, Ind., is untrue. The order has been placed with the Leechburg Foundry and Machine Company of Pittsburgh and is for a second Meets pickling machine, the first one having been furnished some months since, when the plant of the Monongahela Tin Plate Company was first put in operation. The additional pickling machine has been made necessary by reason of the increased output of black plates. The Leechburg Foundry & Machine Company have also secured an order for a 24-inch hot mill to be furnished to the Ellwood Tin Plate Company, Ellwood City, Pa. This new mill is to replace an old and lighter one.

THE MONONGAHELA TIN PLATE COMPANY, Pittsburgh, Pa., are nearly ready for work in their new departments, in which about 100 women will be employed in pickling the plates and polishing the sheets.

MEMORANDA.

J. H. MULHOLLAND, 80 Elm street, New York, makes a specialty of bass, coir, rattan and steel wire brushes. These are made up as stable brushes and deck scrubbers, brushes for cleaning castings and a number of different styles of brushes for cleaning the flues in steam boilers. He also makes a line of steel wire brushes such as are used by chimney sweeps.

S. I. BRIGGS, formerly of Cedar Springs, has opened a hardware store at Stanton, Mich., where he will carry a full stock of hardware, tinware, cutlery, paints and oils, and conduct a tin shop in connection with the business.

THE FIRM of Sayre & Shafer at Montrose, Pa., have dissolved. C. R. Sayre will continue the manufacture of furnaces and steam generators. N. H. Shafer has opened a new store and will deal in shelf hardware, novelties, carpenters' tools, cutlery, tinware, and wood and willow ware.

THE ILLINOIS PURE ALUMINUM COMPANY, Lemont, Ill., issue a catalogue of 54 pages illustrating their pure aluminum cooking utensils. In addition to aluminum stamped cups, milk pans, wash bowls, &c., illustrations are given of spun tea and coffee pots, tea kettles and water pitchers; also of afternoon tea kettles, chafing dishes, forks, spoons, butter plates, tea strainers, &c. The comprehensive nature of the catalogue indicates the remarkable growth of three years' business in the making of aluminum cooking utensils.

L. A. GENDRON & Co., Warren, Mass., issue circulars relating to Gendron's chimney thimble, which is described as so constructed as to overcome all chimney thimble difficulties, such as bulging of plastering, water entering the room, and is a sure preventive against fire.

The following instance of the great dissolving power of sulphuric acid is mentioned by the Engineer of London as having recently occurred in the chemical factories at Mulhouse, Alsace: An operative was blown up into the air and fell into a trough filled about 3 feet deep with sulphuric acid, the temperature of which was found to be 91° C. ten hours after the accident. The death of the man was only proved by the discovery of his carotidous respirator, muzzle, two porcelain buttons and other insoluble articles. Everything else had chemically combined with the acid.

STEAM AND HOT WATER.

The National Temperature Regulator.

The Short-Conrad Company of Cleveland, Ohio, are placing on the market a device for automatically controlling the draft and temperature in a heating system, which they call the National temperature regulator. A thermostat is placed in some portion of the building and set to operate at a given temperature. The thermostat is connected with the valve arrangement shown in the illustration herewith, being connected to the end of the lever marked A. This device may be fastened to the ceiling of the cellar by means of screws through its flanges. The motive power in operating the valve and diaphragm is water, secured by connection with the water service in the building at the point marked "Inlet" on the cut.

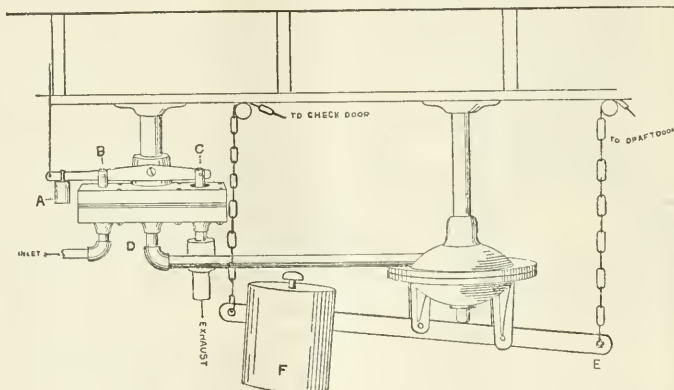
lators are adapted for use in connection with any of the systems of heating now in popular use. —

The Proper Location of Radiators.

From H. H., Boston.—I have noticed an article in *The Metal Worker*, April 20, written by W. H. Pennell, Washington, D. C., on the proper location of radiators, with which I differ. Mr. Pennell says that if the radiator were fixed on the opposite side of the room from the window the warm air would ascend to the ceiling and travel to the sides of the room or walls, but more especially toward the window, and fall down past the transparent surface to the floor and warm that part of the room and thus make the whole room

windows, ventilators, chimney flues or fire places, recesses, &c., also the location of the rooms relative to the building, whether northeast or southwest, or otherwise.

The warm air in a room does not confine itself to specific currents which circulate in one systematic, graceful and majestic movement, as our friend describes. Warm air is light and is easily displaced or chilled. All have seen the small particles floating in the air in a room when the sun's rays are on it, and according to the movements of any person or object in a room we see the small particles which are in the air changing their movements. The sun shining in a room is a good teacher on the circulation of air. We cannot see the air, but we can see the small bodies which are carried with it in its movements. A lighted candle is also a good



The National Temperature Regulator.

When not operated by the thermostat the weight A on the lever shuts off the inflow of water. When the temperature in the room falls a contraction of the thermostatic bar raises the plunger B, allowing the water to enter the valve. This depresses the plunger C and closes the exhaust or outlet, compelling the water to pass through the pipe D to the diaphragm. This expands the diaphragm and depresses the lever arm E, simultaneously opening the draft door and closing the check damper. As soon as an increase in temperature is shown at the thermostat a reversal of the operation begins. The weight F expels the water from the diaphragm, passing it back through valve C to the exhaust pipe, which permits the closing of the draft door and the opening of the check damper. The operation requires but half a tumbler of water. It is stated that the valve must be located directly under the thermostat, but that the diaphragm may be placed wherever the heater is located and connected with the valve by the $\frac{1}{2}$ inch iron pipe. Between the valve and the diaphragm a $\frac{1}{2}$ inch exhaust pipe must be connected. By a slight change of details the regu-

comfortable. This is Mr. Pennell's main contention. I would like to ask him if there are not conditions on which depends such a specific systematic movement of warm air in a room as he describes? I think that if a room in which a hot radiator was placed were made absolutely air tight the movement of warm air would be more likely to favor our friend's theory, because then there would be what we may call a hot air apparatus at work in that room. The hot air would rise from the radiator and the cold air fall from other parts of the room, and the coldest place in the room would be the window, which would act as a condenser, similar to a condenser to a steam engine, and give or supply something which has been displaced by heat. This I would call a systematic movement, but if an absolutely air tight room be the condition on which depends the heating of a room when the radiator is placed on the opposite side of a room from the window, why, then, I think people do not want such a condition.

Mr. Pennell seems to ignore the varied conditions on which depends the proper location of a radiator, such as doors,

teacher. By placing it on a table or on the floor in different parts of the room you see by the movement of the flame that there is a current of air and you will find out where the strongest current of cold air is coming from, or, in other words, from whence it cometh, but you will not so easily find out whither it goeth. Therefore the sun's rays and a lighted candle satisfy us that there are cross currents in a room, and so long as there are people living in a room and moving about there will always be cross currents of air. We never can fully stop the cross currents, but we can counteract the chilling effects of the rushing cold currents coming through the crevices of window frames. Now I come to my own main point of contention in differing from Mr. Pennell—namely, that the proper location for a radiator is either under a window, nearby a window or between doorways.

All have seen a fine spray from a fountain which ascends into the air several feet high, and if undisturbed by the wind the spray ascends in a perpendicular and graceful form, but when a gust of wind comes we then see

the fine spray of water driven before the wind. Another illustration is a fine spray of steam from a steam pipe blown in any direction with the wind and carried some distance before it is condensed. I think these illustrations will prove my point. I mean to say that when a radiator is located under a window, or nearby a window, or between doorways, that the influx of cold air from the crevices of the window frames, or from any other inlet in close proximity to the radiator, will carry or drive the warm air generated by the radiator right into the room and that the radiator will act after the fashion of a hot air furnace, which receives cold air and sends forth warm air, and by this action or movement the warm air will be more efficiently circulated and make the room more comfortable.

Heating Greenhouses by Gas.

In an English journal Thos. Fletcher, the well-known engineer, gives the following information of heating greenhouses with gas as a fuel:

Many conflicting statements have been made as to the cost of this method of heating, none of these giving the exact duty obtained. With the object of setting the matter in such a form that there need be no future doubt or discussion a series of exact observations have been made with every possible care, the results being as follows:

Date,	Mean outside temperature, Degrees.	Mean inside temperature, Degrees.	Rise, Degrees.	Gas consumed Cubic feet.	Gas per hour, Cubic feet.
Jan. 4 to 10...	26	49	23	2,630	153.4
Jan. 11 to 17...	44	54	10	1,670	81.6
Jan. 18 to 24...	38	52	14	1,580	93.4
Jan. 25 to 31...	36	54	18	1,570	91.5
Feb. 1 to 7...	43	55	12	1,380	84
Feb. 8 to 14...	37	55	18	1,470	88.3
Feb. 15 to 21...	35	51	19	1,540	91.6
Feb. 22 to 28...	39	55	16	1,160	71.6

The house is a lean-to, 16 feet by 10 feet, 12 feet high at back, 6 feet at front. Total area of glass, 380 square feet, including wood framing.

It will be noticed, in calculating out each of the above separately, the gas consumption varies, this difference being caused by the varying force of the wind.

Although the figures given are only to the end of February, they have been continued since; but as the sun heat makes the records so irregular they have been discarded. Taking the average results for the eight complete weeks, it will be found that for every 100 square feet of glass a gas consumption of 1 cubic foot per hour will give a rise of exactly $4\frac{1}{2}$ ° F., or 1° F. rise of temperature for every cubic foot per hour consumed in a house having 450 square feet of glass exposed, a rule which, from the care which has been taken to obtain absolute precision, may be relied on. As the main wall is part of a dwelling house, the loss on this side wall needs no consideration. An attempt has been made to take the night averages only after February 28, but the interference by accumulated sun heat during the day has caused sufficient variation to prevent the results being absolutely reliable, although they correspond fairly with the results recorded. As previous experiments have proved, at least nine tenths of the heat is lost through the glass, and the cubic contents of the building needs no con-

sideration. The brick work round is 3 feet high, being in the usual proportion, and the loss of heat through the bricks is allowed for in calculating the glass area.

Position, protection from winds and other interfering conditions will, of course, affect the results, but the above may, I think, be taken as an average standard for calculation.

The average mean temperatures for each month may be obtained from the gardening periodicals or from any physical atlas, and the actual cost of heating any plant house by gas can easily be calculated from the data given.

The Convention of the Master Steam and Hot Water Fitters' Association.

We print below the call to the convention of the Master Steam and Hot Water Fitters' Association of the United States, to be held in Philadelphia, June 13, 14 and 15, which is being sent to the steamfitters throughout the country, bearing the following signatures:

Charles J. Gillis,
Samuel I. Pope,
Albert B. Franklin,
P. S. Hudson,
E. Rutzler,

Advisory Council.

J. Leland Wells,
Arthur C. Walworth,
William P. Thompson,
James Curran,
John W. Dornforth,

Executive Committee.

Approved: Harrie D. Crane, *President.*
Edward P. Bates,
Vice President at Large.

The seventh annual convention of the Master Steam and Hot Water Fitters' Association of the United States, which convenes at the Continental Hotel, in Philadelphia, on June 13 next, will be by far the most important in the annals of the organization.

What our association has or has not accomplished, its victories and defeats, its advances and retreats, are matters of the past and need not be detailed here. We must act now in the living present if we would reap rewards in the future.

For years a handful of loyal and self sacrificing men have kept this organization together, encouraged by the hope that, sooner or later, their efforts would be crowned with success, and our business be placed on a satisfactory and living basis.

Plan after plan has been faithfully tried, method after method has been adopted, only to be abandoned as unequal to the emergency, until it seems as though there was no way out of the woods, and that all the money, energy and time so freely given had been expended for naught.

But as a ship is stripped of all useless hamper both aloft and aloft when going into decisive action, so those in charge of our association affairs, some months since, determined to cast aside all other questions and fight it out under the one flag of protection; protection from without and within, for one and all alike, from the humblest master fitter, whose yearly profit barely suffices for his own and his family's support, to the largest manufacturer, whose surplus can be reckoned by the tens of thousands.

This was, indeed, a radical departure, and one which was fraught with uncertainty and danger. How it has suc-

ceeded thus far, how master fitters and manufacturers alike have welcomed it as a happy solution of a vexed question, is a matter of record, but the fight is not yet over nor the victory yet won.

There is no important movement but what has its opponents, no reform but what must combat cavers and obstructionists; but knowing that we have the great bulk of the fair minded men in all branches of the trade with us we are not fearful of the ultimate results.

But to hasten the day of triumph we must have the countenance and support of all reputable master fitters, wherever dispersed, that, by the weight of numbers, by the power of universal influence, we may make assurance doubly sure.

To this end we earnestly request you to attend our convention, whether you are a member or not, to take part in or watch our debate, to lend your presence and counsel, to stand up and be counted "one."

Remember, this is not a delegate convention; you need represent no one but yourself, nor will you be bound by the action of any caucus or committee; it is a free and open meeting of the constructing master steam, hot water and wrought iron pipe fitters of the United States, with but one object in view, the elevation and betterment of the craft, and how best to help ourselves, each other and those who help us.

Arrangements have been made with all trunk lines for reduced fares. The hotel accommodations are of the best and at most reasonable rates, and your presence at the convention does not bind you to membership unless you so elect.

Will you come and join with us in this work, and assist us in advancing the mechanical, social and financial standing of our business and trade?

HEATING NOTES.

"THE POSTAL TRAVELER" last sent out from the United States Hester Company of Detroit mentions that they are moving their Detroit office to their new factory at Campbelt and Lauderdale avenues. They also refer to their Chicago office at 39 Dearborn street, and also state that their New York office is changed around a little, but is at the same location.

AT THE ANNUAL MEETING of the stockholder of the Vanderman Plumbing & Heating Company, Willimantic, Conn., the old board of directors, consisting of A. T. Fowler, Dennis Shea, E. L. Vanderman and John Reilly, were re-elected. At a meeting of the directors A. T. Fowler was elected president; Dennis Shea, vice president; William Vanderman, treasurer and general manager, and John Reilly, secretary. A dividend of 6 per cent was declared and the capital stock was increased to \$30,000.

THE SMITH & WINCHESTER COMPANY, Boston and New York, are issuing a budget of printed matter giving testimonials of their Winchester steam and hot water apparatus. In one testimonial it is stated that it took just 30 minutes by the watch to put the heater together ready for connection with the system of mains.

THE ANNUAL MEETING of the stockholders of the United States Radiator Company was held at the company's office, Dunkirk, N. Y., May 1, at which time the following officers and directors were elected: President and treasurer, R. J. Grees; vice president, C. D.

Murray; secretary, W. D. Moore; superintendent, J. A. Field; directors, Henry Flinck, E. R. Gifford, R. Rathbun, W. P. Smith, G. K. Fullagar.

JOSEPH BOND of the American Radiator Company has returned to Chicago after an absence of three months in Europe.

THE UNITED STATES HEATER COMPANY have moved their Chicago office and salesroom to more commodious quarters at 39 Dearborn street.

THE Chicago office and salesroom of the Kewanee Boiler Company have been moved to 54 Dearborn street.

W. K. PIERCE, president of the American Boiler Company, is spending a few days at the Chicago office.

THE KEWANEE BOILER COMPANY, Kewanee, Ill., manufacturers of the improved Hixton and Tabasco boilers for steam or hot water heating, have removed from 96 Lake street to more spacious quarters at 54 Dearborn street.

W. H. HILL of the American Radiator Company returned to the New York office this week after a visit to his old home in Detroit.

THE AMERICAN RADIATOR COMPANY, 92 Center street, New York, will furnish 550 radiators for heating the American Surety Building, New York City.

THE AMERICAN BOILER COMPANY, 94 Center street, New York, have received a very handsome medal and diploma for their exhibit of boilers at the exposition at Antwerp. The diploma will be handsomely framed and displayed in their sample rooms.

GILLIS & GEOGHEGHAN have comfortably arranged offices, shop and shipping rooms at 188 Worcester street, New York. They are occupying three floors of the building, which is 50 x 100 feet, while a building is being erected specially adapted to their requirements on the site of the building which they previously occupied and which was destroyed by fire. The new building is being as rapidly completed as is possible in view of the special features of its construction. They have made arrangements and are now turning out work and completing contracts as promptly as if they had not met with great inconvenience through the fire.

C. F. HAUES of the New York office of the Richmond Stove Company of Norwich, Conn., is entertaining J. P. Gullivan of the Norwich engineering corps while he is assisting him in some special work. N. J. Ryer is now traveling on the road in the interests of the Richmond and Victor boilers, with headquarters at 85 Centre street, New York.

T. J. DOUGLAS, well known to the customers of the Richmond Stove Company, has entered into partnership with B. Duggan under the firm name of Duggan & Douglas at 297-299 Lake street, Chicago, where they have the Western agency for the line of goods manufactured by the Richmond Stove Company of Norwich, Conn.

JOHN A. SCOLLAY, 74 Myrtle avenue, Brooklyn, is installing three of his large size new invincible boilers in the residences of different customers in Brooklyn.

THE ARMSTRONG MFG. COMPANY, Bridgeport, Conn., are making a fine display of their plumbers' and steamfitters' specialties in the show window

of their New York office at 139 Centre street. Pipe cutters and pipe wrenches of different sizes are suspended attractively in the upper part of the window, while pipe vices and their special line of adjustable dies and stocks are arranged in the bottom.

GEORGE F. BARD, Norwich, Conn., was in town this week and arranged for a New York agency for his new expanded nipple holder, for threading right and left nipples, with Alexander Don, 61 Gold street, New York.

EARLY LAST SUNDAY MORNING a fire broke out in the building occupied by the Nason Mfg. Company, at 71 Beekman street, New York, and before the flames could be subdued their stock of plumbers' and steamfitters' supplies was damaged to the extent of \$15,000, and the building to the extent of \$20,000. The company immediately cleared away the wreckage and are now in a position to fill all orders promptly.

THE W. H. PAGE BOILER COMPANY, Norwich, Conn., are issuing a new pamphlet of the All Right and Volunteer steam and hot water boilers, the cover of which has an embossed gilt design. The title page is lithographed, showing a Volunteer hot water boiler, and the next page shows a picture of their plant. The book is provided with a very complete index. The first pages present an announcement of the points of excellence in brief and a short comparison of steam and hot water for heating. A brief description and several cuts are used to show the construction of the All Right boiler, followed by a table giving the dimensions and the rating for carrying radiation. The next pages are devoted to sectional views of the Volunteer steam and hot water boilers and a brief description of their construction and operation, followed by tabular information. The Page Safety Sectional boiler, for both heating and power, for brick setting, is also shown by several views. One of the features of this boiler is a 2 inch extra heavy pipe, which is carried between the grate bars from the back of the boiler to the front, where it rises and connects with the front section. This boiler can be arranged with as many as 24 sections, when it has a capacity for carrying 4900 feet of direct steam radiation or 6500 feet of direct hot water radiation. A telegraphic code occupies two pages. The next 24 pages of the book are devoted to testimonials, with half tone engravings of some fine churches, residences and business blocks in different parts of the United States, with text describing the results secured from the boilers in operation.

LOCKWOOD & ADAMS, 143 Centre street, New York, have taken the New York agency for the Exeter line of radiators, made by the Exeter Machine Works, Exeter, N. H.

WM. P. THOMPSON, 112 Broad street, Philadelphia, State Organizer of the Master Steam and Hot Water Fitters' Association of the United States for Pennsylvania, has issued a call for the steam fitters of the State to meet at the Continental Hotel, Philadelphia, June 12, for the purpose of forming a State association.

The Enterprise Boiler Works, Youngstown, Ohio, have lately completed a stand pipe for the water works at that place which holds 538,000 gallons and work has been commenced on a second of similar dimensions.

Trade Notes.

THE ELECTRIC METAL POLISH COMPANY of New York City, have been incorporated, with a capital of \$1000, to manufacture and sell metal polish. The directors are C. Cornhelin of Brooklyn, Chas. B. Peyn of New York and H. C. Hucklin of Jersey City.

"SELECTIONS FROM THE POETS" is the title of a pamphlet issued by the Meriden Machine Tool Company, Meriden, Conn. A number of quotations from well known authors and a number from authors not so well known are presented in a way to incidentally call attention to the product of the company. The attraction of the pamphlet can best be understood by inspecting a copy of it.

AT A MEETING of Coopersburg, Pa., citizens, last week, plans were formulated for the organization of a stock company to engage in the manufacture of Metallic Shelving for vaults and libraries and Metallic Paper Files. Thus far over \$13,000 have been subscribed. By all appearance the project will be a success, and a three story factory building, 100 x 32 feet, will probably be erected and in full operation in three months' time.

THE CLEVELAND STAMPING & TOOL COMPANY, Cleveland, Ohio, inform us that they have recently added an enameling plant to their already extensive works and are now prepared to furnish their entire line of solid steel Hollow Ware enameled. They also say they have added a number of new designs to their line. Their 1895 spring catalogue is now in press and will be ready about May 10.

THE ORNAMENTAL IRON WORK being placed in the Marquette Building, the latest and second in point of size of the Chicago "sky scrapers," will, when completed, be one of the finest examples of American design and workmanship in metal in the country. Incorporated into the design are 24 large panels in cast statuary bronze, portraits of Marquette and his associates and of noted Indians; also scenes in the life of the missionary voyager produced in relief by the American sculptors, Edward Kemeys and Henry McNeil. The work has been executed by the Winslow Bros. Company of Chicago. The works of this company are now being operated to very nearly their full capacity, which gives employment to nearly 800 skilled artisans. Among the larger contracts recently awarded to this company are those for the ornamental iron work in the Jordan, Marsh & Co. Building, Boston, Mass., and the Guaranty Building and Ellicott Square Building, Buffalo, N. Y.

THE ADVERTISEMENT on another page of this issue of the Troy Nickel Works, Troy, N. Y., calls attention to their well known line of Alaska goods and illustrates examples of them. A special feature of the advertisement is the reference to their Troy dampers, which require but one hole in the pipe. In practical operation these dampers have proven exceptionally durable and we understand are giving very general satisfaction.

P. J. CONROY & Co., Paschall Station, Philadelphia, issue an 1895 illustrated catalogue and price-list in the interests of their Automatic Refrigerator Door Fasteners and Locks, which are shown in various styles and finishes, also Hinges and Refrigerator Trimmings.

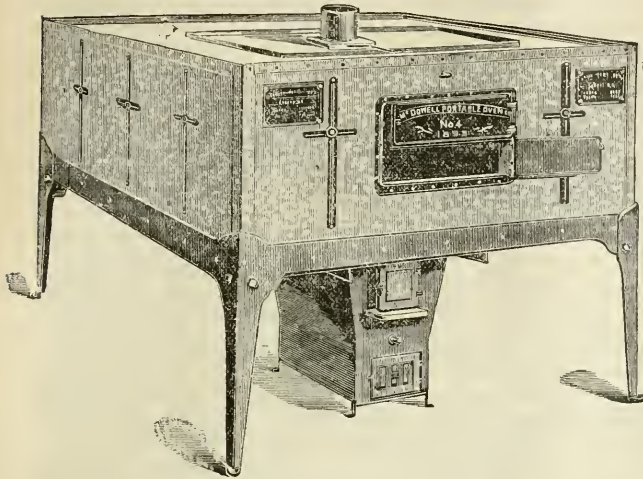
THE NEW SHEET MILL DEPARTMENT has been put in operation at the plant of the W. Dewees Wood Company, McKeesport, Pa., and all the departments of the plant are now running full.

B. B. MORRISON has leased the four-story building at 231 Water street, New York City, a portion of which was lately occupied by N. & G. Taylor Company, where he proposes to carry a large stock of foreign and domestic Tin and Terne Plates, Sheet Iron and other

which represent for the most part machines of various kinds, are finely executed and indicate the excellent quality of work turned out by this well known engraver, who numbers many patrons among the stove foundry and others.

The McDowell Portable Oven.

The McDowell Portable Oven Company of 206 State street, Boston, Mass., have recently improved what is known as



McDowell Portable Oven.

Metals, as well as a very full line of Roofers' and Tinners' Supplies of every kind, for the benefit of the smaller consumers. Mr. Morrison has a large circle of friends in the Tin Plate trade in this section, having been with the firm of Bruce & Cook for several years.

THE PENNSYLVANIA RANGE BOILER COMPANY of Philadelphia, Pa., have been licensed to incorporate, capital stock being \$75,000; directors, Edmund L. Leary, William H. Marsh, John P. Harlan, Lawrence B. Leoy and G. Eugene Harlan, Philadelphia.

THE COMBINATION MONTHLY CALENDAR card and blotter issued by the Joseph Dixon Crucible Company, Jersey City, N. J., shows a wreath crowned Dixon pencil, which is the May pole, around which other smaller pencils are dancing in celebration of the season.

The San Antonio Sewer Pipe Company, San Antonio, Texas, which were recently formed with a capital stock of \$100,000, have purchased clay fields and a large factory building and have placed orders for the necessary machinery. They expect to begin the manufacture of sewer pipe, terra cotta and tiling within the next few months.

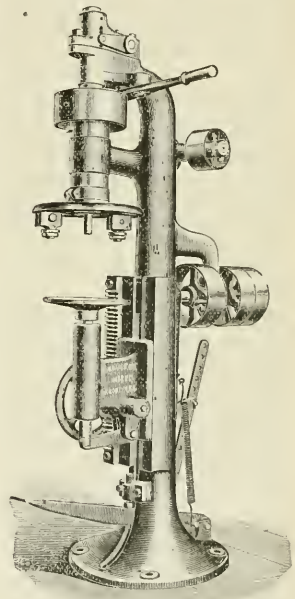
A. Mugford of Hartford, Conn., has issued some samples of the engraver's art showing the character of the work he is prepared to execute on short notice. The illustrations are presented upon a series of sheets of heavy paper bound together at one side by means of silken cord. The printing upon the cover is in red and black, the former color predominating. The illustrations,

the No. 4 Oven of the 1895 pattern, an illustration of which is presented herewith. This oven has been thoroughly reconstructed inside and out, making, it is claimed, a practically perfect portable oven with baking capacity equal to a brick oven 10 x 12 feet inside measure. In addition to the original packing of asbestos there is a solid wall all around the oven composed of non-combustible material and designed to prevent the loss of heat by radiation while effecting a great saving of fuel, time and strength. These the company state are three important items and constitute features which cannot fail to be appreciated by the trade. The company have issued a neat catalogue illustrative of the portable ovens which they manufacture and giving prices, dimensions and full descriptive particulars. From the testimonials which are presented it is evident that the McDowell Portable Oven is a favorite and has been well received wherever introduced.

It is reported that the Japanese of Tokio propose to erect, as a commemoration of their recent war with China, an enormous steel tower, to be about 1000 feet in height, fashioned after the plan of the Eiffel Tower in Paris. According to the proposals, a large hall on the ground floor will contain a permanent exhibit of Japanese products, while rooms are to be provided in the upper galleries for statues or memorials of Japanese statesmen, warriors and others who have rendered conspicuous service to their country. Popular subscriptions are reported to be pouring in fast for this object, and there is said to be little doubt about the plan being carried into effect.

Double Seaming Machine.

E. W. Bliss Company, Brooklyn, N. Y., have bought out what they describe as their No. 02 double seaming machine, intended for round cans. The special feature of this machine is that the cans stand still during the seaming operation instead of being revolved while being seamed. The stationary machine permits the seaming to be done on cans which have to be filled before the lid is seamed to the body, such as paint cans, some kinds of condensed milk cans, &c. The hand lever shown on the top of the machine in the cut is used for actuating the two double seaming rolls which revolve with the large disk around the stationary spindle. The pressure plate fitting the lid of a can is attached to this spindle. The can is raised against it by means of a foot treadle, and the two double seaming rolls, revolving around the can, are successively brought to bear against the edge, thus rapidly double seaming the lid. Adjustments are provided for adapting the machine to any size within its range. The largest diameter of the can adapted to be seamed with the regular disk is 6 inches, and with special disk 9 inches, and the height



Double Seaming Machine.

of the cans to which it is adapted is 9 inches. The total height of the machine is 5 feet 5 inches and it weighs 550 pounds.

A bill has been introduced in the Canadian House of Commons to amend the Railway act by preventing the Government giving railroad contracts to foreigners.

One of the most interesting features of the international exposition to be held at Atlanta, Ga., next September will be a negro building, 276 feet in length, in which will be demonstrated in object lessons the progress made by the Afro-American race since the days of slavery.

STOVE TRADE NOTES.

Gasoline Stoves and the Insurance Companies.

We have been surprised at recent complaints from correspondents located in the East to the effect that their business in gasoline stoves was being interfered with by the insurance companies, who had suddenly determined to enforce extra rates where gasoline stoves were used. An investigation of the situation in the Eastern States, with a view to discover whether this was uniformly the case, has been attended with considerable difficulty, and it is not easy to determine just what the situation is. It would appear, however, that the letter of the law as existing among the insurance companies is not enforced, in all cases. It has been intimated that the companies, finding last year so unprofitable, determined to use every means possible to increase the profits this year, and among other things increased the rates on gasoline stoves. In some instances they have succeeded in making people pay for the gasoline clause, but in more cases, as far as we can learn, they have not even attempted to enforce the new order of things.

Introduction Opposed by Eastern Companies.

When gasoline stoves were first talked about in the East a few years ago the insurance companies were almost as a unit opposed to their use. In New England especially they barred the use of the new apparatus by exorbitant charges and the result was to discourage the gasoline stove manufacturers from attempting to sell in that section of the country. As a result of persistent effort, however, on the part of those who were interested in the gasoline stove the insurance companies were little by little persuaded that it was not an unduly dangerous fuel, and it came to pass that permits were generally granted without extra charge.

We addressed inquiries lately to the New England Insurance Exchange, located in Boston, which is the body governing most of New England, asking for the position of the companies relating to gasoline insurance and received the following reply:

We would state that the matter of charges for the use of gasoline stoves varies in New England, it being left to the various local boards to decide this matter.

They inclosed us a copy of a permit required on all policies where permission to use gasoline stoves is granted. This permit is in the usual form, reading: "In consideration of — dollars,

extra premium, permission is hereby given, &c."

Increased Rates Applied With Discrimination.

We have letters from several prominent dealers in New England which would indicate that the general practice is not to charge for the use of gasoline. A correspondent in Hartford writes:

The New England Board of Fire Underwriters voted to allow the insured to use gasoline stoves with ordinary restrictions and no increase in rates. A dealer wishing to place them on sale, or a party desiring to use one for cooking apparatus, notifies the agents of the company and they give a permit to be placed with the policies. We have renewed two policies since April 1, 1893, both with the permit on them.

Another letter which goes somewhat extensively into the situation comes from a representative dealer in a representative Connecticut town:

I took particular pains to see a member of the local Board of Fire Underwriters and he assured me that there would be no extra charge for the use of gasoline stoves. All that would be necessary would be a permit to use one. I do not know how many companies this includes, but I am satisfied it takes in all companies doing business in this locality, as all the local agents are united and have a regular board, so that the rule in regard to gasoline stoves governs them all. My informant told me that the clerk of the board received his instructions from headquarters the first of the year to make charges, but it was afterward recalled, as it was a mistake to send out such instructions in the first place. I think this is what has caused all the misunderstanding in regard to extra charges.

If the experience of this writer represents the general situation throughout the New England States it would seem that the insurance companies had endeavored early in the year to enforce higher charges, but on consideration had recalled the instructions, the result being a good deal of confusion.

The Situation in New York State.

In New York State outside of New York City and adjacent territory the insurance matters are under the charge of the Underwriters' Association located at Syracuse, N. Y. In reply to a letter addressed to the secretary of the Underwriters' Association we are advised:

In a few localities in this State permits are granted gratis for the use of gasoline stoves in dwellings, but in more a charge is made. Each local board of underwriters has rules of its own on this subject.

The advices from the secretary of the board bear out very closely what we have heard from correspondents in different

parts of the State. The practice does apparently vary, and as the result of this unreasonable action on the part of the insurance companies there is a decided variation of feeling, which quotations from a few letters will suffice to indicate. A correspondent in a large city in the central western part of the State writes:

The gasoline stove we handle is on the insurance list and a permit is given for its use by the insurance companies without any extra expense.

Our correspondent then goes on to specify the regulations respecting the storage of gasoline, saying that one company has forbidden them to keep their storage tank within 15 feet of the stove, while others make no such exception.

Another correspondent writes:

We have no trouble with insurance on gasoline stoves except with those outside of the trust. There is no charge for insurance that we ever heard of.

Letters like that would seem to indicate that everything is smooth for the dealer in gasoline stoves and the user of the same in New York State, but to show that the practice does vary as intimated, we present the following from a correspondent in the eastern central part of the State:

The greatest outrage ever imposed upon us is the way the insurance companies have treated us on gasoline stoves. Hundreds of families would use gasoline stoves if they could do it without any trouble, but in every policy they put in a clause that the holder of the policy cannot recover if the fire occurs from gasoline. The result of this treatment has been that our trade in gasoline stoves has been destroyed entirely.

We trust for the good of the trade throughout New York State that this latter correspondent does not represent the majority of cities and towns. We have reason to believe that his experience is the exception and if he will keep up persistent agitation that he will soon be relieved of the burden of increased insurance charges on this score.

New York City and Neighborhood.

In New York City and adjacent territory insurance matters are under the control of the Suburban Underwriters Association, who have a gasoline stove permit designating by name the stoves that may be used and specifying how the gasoline shall be handled, &c., as well as adding a list of charges, according to which a policy holder must pay \$1 a thousand extra where gasoline

stoves are used. How generally this clause is enforced, however, is another matter. Conversations with the insurance companies elicited little information. They point to the clause and intimate that they make the charge, but the impression is gathered, nevertheless, that all of the companies in the association are not particular about enforcing it, and as a matter of fact some of the prominent insurance companies are opposed to making gasoline stoves an extra risk. A letter from a New York dealer is typical, we imagine, of the situation in many places:

I have never been charged anything extra for gasoline stoves. But one policy this spring had a charge of \$2 extra when renewed for the gasoline clause. I had the policy canceled and gave it to another agent and he insured it without any extra charge for the gasoline clause. Another policy expired last week in the hands of the former agent and he sent a renewal with the gasoline clause attached, but no extra charge. I find the agents are collecting it whenever they can and it does interfere very much with the sale of gasoline stoves. My customers complain of the high rates of insurance without paying extra for the use of gasoline stoves. It seems the agents have the privilege of collecting more if they can.

This, as we mentioned, may be taken as a typical case, and illustrates the unfortunate condition of affairs in the East. The companies nominally make the charge, but if sufficient objection is raised do not actually collect it. In some localities they have all the companies well bound together, and those who use gasoline are forced to pay for the privilege. A prominent dealer, writing from one of the larger towns of Long Island, says:

Insurance companies, with the exception of two, are insisting upon an extra charge of \$2 per \$1000 for permission to use gasoline stoves. It is a drawback to the sale of such stoves. Until recently certain approved stoves have been accepted in a risk without extra charge. I find that the practice of local agents is not to inquire too closely into the question of what kind of a stove they are permitting to be used, as it is against their interest to discover a stove that underwriters discriminate against. If we could have competition among the insurance companies the evil would right itself.

An Aggressive Stand Will Win.

We have given a few illustrations from different parts of the East to show what the situation is. It is, however, but fair to the insurance companies to explain that there have been instances of individuals having complained of being unable to insure for gasoline stoves, and the result of investigation has shown pretty clearly that the objection of the companies was a personal matter and that the individual's reputation had been shaken by too frequent configurations. It is also true that the companies sometimes utterly refuse to take an extra hazardous risk involving the use of gasoline stoves. In such a

case the refusal is due more to the location or some other feature of the premises than to the use of gasoline. But these exceptions have nothing to do with the general attitude of the companies on gasoline insurance.

We would be glad if this brief survey of the situation in the Eastern States might have the effect of awaking dealers, manufacturers and all interested in the use of gasoline to the necessity of fighting the insurance companies on what appears to be their very unjust discrimination. More especially is it shown to be unjust from the fact that charges are enforced in some cases and not in others; the discrimination is proof of the weakness of the insurance companies' position. We shall be very glad to have dealers, manufacturers and others use our columns freely, and if anything is to be gained by discussion we will do everything in our power to give the matter publicity.

Cost Formula.*

BY J. W. VAN CLEAVE.

Mr. President: You know with what reluctance I consented to say anything in regard to the cost formula, but I realized the correctness of your position when you suggested that in order to succeed at anything in times like these one must keep everlastingly at it, and that—

The constant drop of water
Wears away the hardest stone;
The constant gnaw of Towser
Masticates the toughest bone;
The constant cooling lover
Carries off the blushing girl,
And the crank on cost production
Gives them all the whirl.

With the experience of the past before me on matters pertaining to cost accounts and the cost formula as adopted by the National Association, and particularly in view of the discussion of this subject at the meeting held in Chicago in 1893, I realize that a great many feel that some of us are cranks on accounts, and some doubtless go so far as to feel that we are inclined to force our opinions upon the members of the association, but I trust that the explanation that you have made and the fact that this effort on my part is at your request will prevent any one from criticising any statements that I may make or misjudging my motives.

I have made the statement that any intelligent man, after thoroughly examining or using the formula as adopted by the association, would be led into making changes that would serve to simplify keeping of accounts that would enable the manufacturer to ascertain the cost of individual stoves, and that the results would be equally as accurate, if not more so, than if the formula was used exactly as it now appears on the records of the association.

Mr. Thomas has said that there is not any question but that three accounts could be opened which would embrace the whole cost of the output of any foundry in the country—that is, absolute cost, general manufacturing expense and general distributing expense—and that all the information necessary to obtain the cost of the in-

dividual stoves by the formula now in use could be obtained just as well with those three accounts as the number that are required in the association formula. My experience of the past five years has all tended to confirm this statement, but my experience has also taught me that there is great satisfaction and profit and information to be derived from the keeping of a cost ledger, or, as we term it, a subsidiary ledger, which is simply a book in which all items pertaining to absolute cost, manufacturing expense or distributing expense are kept and itemized, each item of expense that represents all general articles used in our daily practice having a heading of its own.

Cost Ledger.

If a cost ledger is kept monthly or daily, and every item of expenditure, whether pig iron or stove putty, is kept under a heading of its own—that is to say, having an account of its own—and just a little intelligence used in classifying these accounts under their proper head of absolute cost, manufacturing expense and distributing expense, it would be easy then at the close of the fiscal year to draw off a balance sheet of the cost ledger under each general head of absolute cost, manufacturing expense and distributing expense, and the total expenditure for every item used during the year would be shown, and the total of each account would be the factors that are necessary in order to ascertain the cost of any individual stove produced in any foundry in which this cost ledger is kept. What I mean by factors is the ratio of general manufacturing expense and general distributing expense.

The conclusion has been forced upon my mind for the past ten years that a great many manufacturers, by reason of the fact that they do not keep a daily itemized ledger of their expenditures, lose sight of many items of expense when they come to compute their cost, and there is no other way in which every dollar that cannot be charged specifically to any stove that is made can be included in the cost of the stove except by percentage; therefore, it must be apparent that the object of these two accounts—that is to say, general manufacturing expense and general distributing expense—is to ascertain the ratio of expense that each of these accounts bears to the total cost of the output and to the total volume of business.

The form of the formula for ascertaining the cost of individual stoves recommended by the committee and adopted as a part of the cost formula is sufficient in itself and is susceptible of any change required by any individual manufacturer to make it applicable to any special feature that might exist in his business. To illustrate: If, like ourselves, a manufacturer has a special feature, like the enamelling of oven doors, the same as many of you now have, the tin lining of oven doors and so on, the main point and the object to be gained is, first, the total cost of a year's production in detail, that is to say, an itemized account of all material, labor, &c., used during the year, and a ledger kept accurately for one year will demonstrate, I am sure, to any gentleman present that the formula presented by the committee could be very much simplified.

Objections to the Formula.

The objections that I have always had to the formula adopted by the association, and its adoption reaffirmed at the meeting in 1893, are the proposed division of accounts; that is to say, the charging of 37½ per cent. of manager's

* Read at the convention of stove manufacturers held at Chicago, May 1, 1895.

salary to general foundry expense and 6 3/4 per cent. to general distributing expense. I have been opposed to a division of accounts and do not believe it is necessary, and to this extent I think the formula presented by the committee (of which I was a member) has been misleading, and as has been stated here, the formula and cost ledger as proposed, as well as the discussion that has taken place, appear to a great many members of this association as a foreign or unknown language. They do not seem to comprehend it, and the whole object I have had in view in anything I have said on the subject was, if possible, to present this cost formula in a simple form, so that the average book-keeper, such as we employ, can master all of the propositions contained in it, and that not only professional accountants and cranks on accounts could understand it, but the average manufacturer or officers of these stove corporations could thoroughly understand them. As Mr. Pfahler has said, the larger institutions employing more competent accountants could subdivide these accounts indefinitely, because they want the knowledge it gives, but there are a great many people who either do not care for this information, or whose lines of goods are so simple that it is not necessary for them to have these accounts subdivided. Therefore, this class of manufacturers seem to have taken no interest whatever in the cost formula, and it is for this reason, in my opinion, that more stove manufacturers have not adopted the formula as presented by the National Association. Hence, I say it is true that in a small foundry manufacturing a few articles that are simply castings, it is unnecessary for them to keep a cost ledger, but they can keep in their general ledger three accounts headed absolute cost, general manufacturing expense and distributing expense, thus enabling such a manufacturer to ascertain as nearly correctly as any of us can the cost of any of the goods produced by him. If this is true, then the simple formula can be adopted by the larger and more extensive manufacturer, and the accounts of the larger business subdivided until each item entering into the cost of the construction and distribution can be kept under a separate heading and a balance sheet drawn off at the end of the year, showing the total cost under the head of the three accounts that are proposed.

Interest on Capital.

It is my intention to enter into the discussion of the subject of interest on capital, but knowing that it is a subject upon which business men as well as manufacturers differ widely, and having thought a great deal over it in the past five years, and the more I think of it the more objectionable it appears to me, in fact I believe it is wrong and serves only to deceive, and that for the purpose of ascertaining the cost of goods manufactured, the charging of interest on capital invested is in one sense like changing your deposits from one bank to another each day, or taking a dollar from one pocket and putting it into another and calling it business.

If a manufacturer has \$500,000 capital in his business and the absolute cost of his annual production is \$300,000, then 6 per cent. of his capital is 10 per cent. on his absolute cost, and if the absolute cost of a certain stove is \$10, then 10 per cent. is added to the absolute cost, interest on capital being treated as a manufacturing expense in order that it might enter into the cost of every stove. You will see that under

the present formula you would add 10 per cent. to the \$10 absolute cost of the stove, or \$1; you would then add to this dollar your distributing expenses, which we will say is 25 per cent. more, making \$1.25; to this \$1.25 you will add 20 per cent. for net profit, thus adding to your selling price \$1.50, one-third of which amount is added to the 6 per cent. interest on your capital. The only difference between the above problem and the present formula is that under the present formula 6 3/4 per cent. of interest on capital is charged to general manufacturing expense and 3 3/4 per cent. is charged to distributing expense, and I am sure these two propositions will show how ridiculous it is to use interest on capital invested as a factor of cost.

In addition, the rate of interest is governed entirely by the location of the business; for instance, the rate in New York might be 4 per cent., in Kansas City 8 per cent., and in Texas 12 per cent.; therefore, I would recommend that this feature of the cost formula be eliminated, as it only serves to deceive, and for that reason it is impossible to get more than half of the manufacturers to use the feature of interest on capital in ascertaining cost.

Uniform Methods.

This leads to one of the most important features concerning cost accounts. It has been frequently stated by members of the association that uniform methods in the keeping of cost accounts were of more consequence than absolute accuracy. This statement has never been denied; on the contrary, it has been accepted by all members of this association as being true; therefore, if it is true that a uniform system of keeping cost accounts is of such importance, and if it is true, as was stated by Mr. Sard in 1892, that the formula, as now presented, was a pretty complicated matter—and if it was complicated to a man like Mr. Sard, what must it be to a man down in St. Louis or even in Chicago?—my suggestion would be that in view of the fact that a great many people must creep in the matter of cost accounts before they can walk, that a form of cost ledger be prepared and presented to the association in a more simple form, but retaining all of the essential features of the present formula, which would necessitate the keeping of only three accounts—viz., absolute cost, manufacturing expense and distributing expense—and I would most earnestly recommend every member of this association and every stove manufacturer in the country to keep an itemized cost ledger divided into three parts, the first to contain all of the accounts of all items entering into manufacture that can be charged specifically to the individual stove, such as pig iron, molding, mounting, rods, knobs, and all materials of that class.

2. All items entering into the cost of manufacture that cannot be charged to any individual stove specifically, such as superintendents, clerks, watchman, miscellaneous labor, sand and facing, molders' and mounting tools, emery wheels, oils, waste, gas and water, insurance and taxes, rivets and washers, stove putty, lumber, patterns and flasks, and in fact all items of expense that cannot be charged directly to any individual stove, and all items that must of necessity be spread over the cost of manufacture by percentage and which cannot under any circumstances be charged specifically to any individual stove.

3. Salaries of all officers, clerks, part-

ners, &c., traveling expense, discounts and interest on borrowed money, discounts for prepayment, advertising, stationery, postage, traveling salesmen, allowances, attorney's fees, losses, &c.

If a ledger of this kind is opened by the smallest or largest manufacturer in this room, there would be found a large number of accounts and items of expense in each subdivision that no cognizance has been taken of heretofore, and it would take very little experience or intelligence to separate and classify these items of expense into their proper departments, and this, in the net, is my proposition to simplify the cost formula which we have adopted, without any complication, subdivision of accounts, interest on capital, &c., such as serves to complicate the present formula.

Cartage.

At the meeting in 1893 the subject of cartage was discussed, and I desire to give you our own experience on the item of cartage, in the hope that our treatment of it may establish a precedent for the future not only of this account of cartage, but of any similar account that may present itself in the experience of any individual manufacturer. We have no store or branch house, and our general office is at our foundry. We keep what we term a cartage account, which is practically a stable account, as we own our teams. We charge to this account all labor, feed, repairs, wagons, purchase of stock and every item of expense pertaining to the maintenance of the teams. This expense, in addition to the deductions made at the close of each fiscal year for wear and tear on stock and vehicles, represents to us the cost of cartage for the fiscal year. We keep a record daily of the amount of cartage charged, and at the end of each month a proper entry is made giving the stable or cartage account credit for the amount that it has earned. At the end of the year the difference, whether a credit or a charge, is disposed of to proper account, whether to manufacturing or distributing account matters little for this illustration.

Thus you will see that the keeping of an itemized ledger, or cost ledger, or subsidiary ledger, as it is termed, necessitates the entering of every expenditure, as well as the opening of innumerable accounts covering all purchases made and expenses for labor, &c.; that it is a necessity, a complete history of the year's business; and with the balance sheet drawn off from a ledger of this kind it then becomes an easy matter for any intelligent man to ascertain the cost of any article produced by him, whether a stove, piano or sewing machine. It must be borne in mind, however, that the most important results to be obtained from the keeping of this subsidiary ledger are to ascertain accurately the ratio which foundry expense bears to the absolute cost of the year's product, so that a certain percentage can be added to the known absolute cost of any individual stove, thus giving the cost of the stove in the warehouse.

Distributing Expense.

The same is true of the distributing expense to be applied in a similar manner. There is one most important feature in connection with the selling price of manufactured goods, and it is one that very many bright men have seemingly been unable to comprehend, and it is one that the failure to understand has caused the business men of this country more loss than any other feature of their business, and that is a proper

understanding as to the proper application of distributing expense to the cost of goods in the warehouse. It is not at all difficult to apply manufacturing expense to the absolute cost, for the reason that the two accounts are fixed factors, but the distributing expense is different. The ratio of percentage of the distributing expense is obtained by using the total amount of annual sales and the total amount of distributing expense. This is common practice. If, therefore, the amount of goods sold is used as a factor to obtain the ratio of distributing expense, is it not a fair proposition to use the selling price of a stove as a similar factor, and if the ratio of percentage is found to be 20 per cent., for illustration, then the cost of selling the individual stove should be obtained by taking 20 per cent. of the selling price of the stove, and not 20 per cent. of the cost of the stove in the warehouse. The best proof of this is the fact that distributing expense does not apply until the stove is sold. To illustrate : Let the cost of a certain stove be \$10 in the warehouse; let the selling price be fixed at \$13, and the ratio of distributing expense based on the gross sales be fixed at 20 per cent.; it would then cost \$2.60 to sell the \$13 stove, thus making the cost of the stove sold \$12.60 and the net profit 40 cents.

Again, there are no two lines of stoves or item of manufacture that pay the same gross or net profit; hence the difficulty of knowing the actual cost of selling expense on any one stove unless the result is obtained as above stated.

Last, but not least, this system is absolutely safe. By using the factors given herein the danger line, when figuring close selling prices, is always a prominent feature; the prominence of this danger signal would surely lead to an intelligent examination into the actual cost of selling the individual stove, which would at once establish the business upon a more profitable basis.

The old system of computing cost upon the ton basis is another proof of the soundness of my proposition and an indisputable argument against the fallacy of the old method. It has been said that it is easy to criticise and tear down, but that it is hard to create or build up, and I take it for granted that the real meaning of this is that most any one can tear down, but that it takes a really smart man to create and build up. Therefore, with a view of completing these suggestions I have made, I desire to present to you an imaginary balance sheet, taken from an imaginary subsidiary ledger, containing such accounts as I have recommended to be opened in a cost ledger for a foundry doing a business, say, of \$100,000 per annum. I will thank you all to please bear in mind that the figures are used here simply as an illustration, but that everything that is presented at this time and every account which is referred to is taken from our subsidiary ledger, and is in daily practice and is not in any sense theoretical.

Imaginary Balance Sheet.

Before entering into an explanation of this imaginary balance sheet I desire to call attention to the fact that in every foundry there are almost daily unexpected items of expense presented to the management. In addition to this there are very many expenses that are not noted in the ordinary run of business unless a system such as suggested—that is to say, the keeping of a cost ledger or subsidiary ledger—is made a part of the daily practice. I refer to such accounts as breakage all about

the foundry, and especially in the mounting room. This breakage represents to the manufacturer a cost of molding, cleaning, grinding, piling and handling goods, and unless a correct account is kept of such breakage and the item entered into this subsidiary ledger is there any way on earth that this expense can be merged into the cost of the goods, except by making it a part of the manufacturing expense and applying it by percentage? There are many such items. For instance, the keeping in order of the patterns, such as waxing them or taking care of them, or putting them into pattern vaulds, &c.; miscellaneous lumber that is used, the breakage in piling and handling of goods and the cost of repairing same, stove putty, the blacking of stoves for sample purposes, repairs to building, machinery and all such expense as that, and unless records are kept of them or the charges made directly and specifically to accounts such as I suggest, is there any way to get these items of expense into the cost of each individual stove except by percentage?

There is another suggestion that I

would make, and that is, that every department of your business should be separated in exactly the same manner that you separate the stove business that is to say, if you are running a nickel department, why, treat all of the items of material, labor, &c., exactly as they are treated in your general accounts, charging to the department all expenditures made for it and crediting the department with the goods produced by it at a fixed price, and closing the account at the end of the year with either a credit or a loss, as the case may be. Unless a business which has various departments of this kind is kept in this way it is very easy to make the mistake of omitting entirely the total cost of such department from your calculation of cost.

[Mr. Van Cleave drew upon a black board a statement of costs to accompany his paper, of which we present a copy below. The percentages are, of course, arbitrary and are not intended to be exact, but merely to illustrate the scheme of calculating costs which Mr. Van Cleave suggests.]

ABSOLUTE COST.

<i>Pig Iron.</i>	<i>Cupola Cost.</i>	<i>Molding.</i>	<i>Mounting.</i>	<i>Cleaning and pitting.</i>	<i>Miscellaneous supplies that can be charged specifically to each individual stove.</i>
Inventory \$800 Purchase. 10,000 10,800 Stock..... \$90	Coke, labor, flux, fire clay, kin- dling, re- pairs. \$2,300	\$19,000	\$5,000	\$1,350	\$16,450
\$10,000	\$2.20 per ton.	\$19 per ton.	\$5 per ton.	\$1.35 per ton.	
<i>Distributing expense.</i>		<i>General manufacturing expense.</i>			<i>Net earnings.</i>
Salaries of office clerks, traveling, advertising, discounts on prepay- ments, interest and dis- counts on borrowed money, attorneys' fees, postage, stationery, char- ity, miscellaneous ex- pense.....	\$30,000	Superintendent, miscellaneous labor, sand and facing, putty, fuel, engine and machinery expense, oil and waste, gas and water, insurance and taxes, inspection, instructor, fore- man, patterns and flasks and main- tenance, all miscellaneous manu- facturing expense, breakage in all departments.....			\$12,500 \$18,500

COST OF 200-POUND STOVE.

Iron, melted.....	\$1.21	Cost in warehouse.....	\$9.75
Cleaning.....	.14	Selling price.....	\$10.00
Molding.....	1.90	Cost of selling (20 per cent.).....	2.00
Mounting.....	.60		\$8.00
Nails, bolts, knobs, mica, door linings, crating, nickel, ash pan, &c....	1.55	Net profit on selling price.....	1.25 6.75
	\$5.40		
Twenty-five per cent. foundry expense..	1.35		
	\$6.75		

RECAPITULATION.

Pig iron.....	\$10,000		Cost in warehouse	\$87,500
Capola cost of melting, 2.20	\$2.20 per ton.		Distributing expense, 20 per cent.....	20,000
Cleaning and piling	1.35	1.35 per ton.		
Molding.....	19,000	19.00 per ton.		\$87,500
Mounting.....	5,600	5.60 per ton.	Net profit.....	13,500
Miscellaneous supplies				<u>\$100,000</u>
chargeable specifically to each stove.....	16,450			
	<u>\$54,000</u>			
Manufacturing expense, 25 per cent.....	13,500			
	<u>\$87,500</u>			

Echoes of the Stove Convention.

—THE BANQUET will very probably be one of the features of future conventions. It is regarded as probably the most successful means of cultivating sociability and bringing members into close personal relations that could be devised. Greater interest appeared to be taken in all the proceedings of this year's meeting than for some time, and this is ascribed to the fact that the banquet broke into the usual monotony of practical business sessions, with their constant discussion of technical subjects, and for a time turned the thoughts of the members into a lighter vein. Many interesting speeches were made upon this occasion, some of them brilliant, others full of pungent but good natured satire, and not a few devoted to serious matters and bristling with wholesome truths. Occasionally a speaker was gayed by some of his jovial friends, but none were disconcerted, and often the tables were turned very neatly on those who began the attack. President George D. Dana made an admirable toastmaster, introducing each speaker with an appropriate sentiment or with a suggestion which formed a good topic for treatment on such an occasion. The orchestra had been coached, and the selections played after the speeches often added zest to the remarks made. For instance, after the speech of Henry Cribben, president of the Defense Association, it was a happy thought which suggested "Baby Mine." It may perhaps be well to remark that at this banquet the free list was absolutely suspended. Everybody present, including trade representatives and the press, paid his quota of the expense.

—A NOTICEABLE EVENT of this year's convention was the return to the fold of some of the wandering sheep. Several prominent houses, whose representatives had been conspicuously absent for some years, renewed their membership and signified their intention to hereafter take a greater interest in the work of the association. This is of more than ordinary significance in view of the fact that reports had been in circulation of a probable abandonment of the National Association and the continuance of the Defense Association as the sole national body. The argument has been made that local associations answer all the purposes aimed at by the national, and that they would be strengthened and made much more influential if they received the entire attention of those who now attach most importance to the proceedings of the national organization. But the remarkable interest displayed in the convention of 1895 has very probably put a stop to all thought of discontinuing the work of the national. It certainly provides an opportunity for the interchange of views among manufacturers of all sections which they would not otherwise enjoy, and thus tends to soften asperities and mitigate the harshness of commercial warfare. Such an opportunity would not be presented in the Defense Association, which has been organized for a specific object and does not include so general a membership.

—THE SELECTION OF NEW YORK as the place of meeting for the next annual convention is regarded with much sat-

isfaction. The annual gatherings have been held in Chicago so long that the National Association almost appears to be a Chicago organization. That city is unquestionably an excellent place for a convention, being easy of access to a very large number of stove manufacturers and almost every Eastern manufacturer having a Chicago connection whom it is desirable to visit at least once a year. But a national body cannot afford to have a distinctly local flavor, and this it certainly acquires by successively meeting in one city. New York has now broken the Chicago charm and perhaps some other city even less familiar to stove men may be chosen for the succession. Hopes are entertained that by meeting in the East the interest of more Eastern manufacturers will be excited and that further accessions to the membership may be secured among those who have regarded the national stove organizations as mainly under Western influence. Possibly another reason for going to New York may be to test the character of Eastern hospitality and compare it with the Western brand. It therefore behooves our Eastern friends to look to their laurels in this respect.

—THE ELECTION OF LAZARD KAHN to the presidency of the National Association leaves behind it no sting. He is exceedingly popular, possesses great ability, is a ready speaker, takes a liberal view of affairs, is a man of decision, has the confidence of his associates and is expected to make a fine president. There are other aspirants to the position who would also fill the chair very creditably, but the fact is recognized that but one man can be chosen. The others will await their turn with patience and the deferred honor will be sweeter when it comes.

—THE RE-ELECTION OF Henry Cribben as president of the Defense Association was in accordance with the established policy of that organization, which is to keep a good man in office from year to year. Knowing exactly the sort of timber they have in Henry Cribben, the members of the Defense Association are disposed to stick to that ship. He has pleased with his associates to be released from the cares of office, but they will not yet permit him to fall back into the ranks.

—THE SELECTION OF THOMAS J. HOGAN as secretary of both associations meets with universal approval. C. W. Sison of Louisville, Ky., received some support prior to the election, but it was decided to make no contest, so that Mr. Hogan's name was the only one presented. In order that both associations might work in harmony in this matter a committee, consisting of Grange Sard, E. N. Peck, C. H. Castle and President Henry Cribben, *ex officio*, was appointed by the Defense Association to meet a like committee of the National Association subsequently appointed, which consisted of J. W. Van Cleave, H. W. Buttorff, D. G. Rennolds and President George D. Dana, *ex officio*. They unanimously recommended Mr. Hogan for secretary of the National Association. Inasmuch as the Defense Association had previously expressed their preference for him, this settled the question. After his

formal election by the National Association he was escorted into the hall by a committee and received with much applause, when he acknowledged the honor in a graceful speech. Mr. Hogan's headquarters, as previously announced, will be in Chicago. He will occupy Room 209 Atherum Building, 52 Dearborn street, immediately opposite *The Metal Worker's* Chicago office. Mr. Hogan's administration is a guaranteed success from the beginning.

—THE HEADQUARTERS OF *The Metal Worker* in the Auditorium Hotel proved very popular and were visited by almost the entire convention. This was particularly the case on Wednesday evening, when a fine view of a fire in an adjoining block was had from our windows. As all other attractions were deserted for this great spectacle, a Chicago fire, and *The Metal Worker's* quarters were so very convenient for its full enjoyment, the wicked and malicious insinuation was made that we had started the fire for this purpose, all of which we most indignantly and vehemently deny. We are not obliged to burn a city to secure the attention of the members of the stove trade.

—H. W. BUTTORFF of Nashville, Tenn., is inclined to take a much more gloomy view of the condition of trade than many of his colleagues. The trade of his house extends all over the South except Maryland. He says that in the past three months collections have been worse than ever before. More of his customers have asked for extensions, more of them have given notes, more of them have allowed notes to go to protest, fewer of them have discounted bills and more of them have made excuses for not paying bills than during the height of the panic. In his judgment the South has been drained of its money and prosperity will not return until we have free coinage of silver.

—D. G. RENNOLDS of Richmond, Va., took a wholly opposite position. He said that in his section the cheapest class of stoves caught the trade, and the way to meet such a state of affairs was to make cheap stoves also. His company had followed this plan and were fairly satisfied with the results, so much so that they felt like chiding those who took too gloomy a view of the situation.

—ALBERT MOFFATT of Marengo, Ill., is reported to have walked in on Wednesday evening, which explains why he was so late at the banquet.

—C. H. TROWBRIDGE of Hannibal, Mo., is not favorably impressed with the outlook for trade. Not enough orders have been entered on manufacturers' book to give the future a hopeful cast. The movement may come later, but if it does it will have to be much heavier than usual to make the year's business what it should be.

—H. TERSTEGGE of Louisville, Ky., asserts that the only way to drive the so-called pirates out of business is by selling repairs at 2½ cents per pound.

Such heroic measures, however, are not likely to be instituted.

* *

— WHO IS THE AUTHOR of the new aphorism, "When you pay the freight you know where the sand comes from?"

* *

— THE DISCUSSION of cost sheets, which was led by J. W. Van Cleave of St. Louis, received more attention than any other single question that came before the convention. The discussion ran on long after the session was over, up and down the corridors, in and out of the elevators, around the tables of the Auditorium café and in front of the mahogany on which liquid refreshment was served by white jacketed attendants. Everywhere was heard, "I add 20 per cent. to the cost," or "I deduct 25 per cent. from the selling price," or some other equally significant formula, but what it all meant none but the initiated could explain—and explanations were out of order.

* *

— THE COST QUESTION is a great weariness to the spirit anyhow. A manufacturer figures on all his elements of cost, looks carefully after every detail, sees where he can cut down some unnecessary expense here or stop some waste there, then determines the price he should sell at to make a reasonable profit, and what is the outcome? He must meet market conditions and sell at a price that will move his goods out of his warehouse.

* *

— THE MOST POLISHED SPEECH at the banquet was made by Grange Sard, the wittiest by Henry Gleason, the most eloquent by Henry Cribben, the most profound by Rev. Dr. Carson and the most vigorous by Fred. E. Lee. The best political speech was made by George H. Barbour, and yet it was without a suspicion of partisanship. It is understood that Mr. Barbour is very likely to be the choice of his fellow citizens for Mayor of Detroit at the next municipal election.

* *

— C. R. VANDERCOOK of Austin, Ill., made a brief visit to the Auditorium during the convention. Mr. Vandercook claims that in 1846 he made the first stoves ever cast in Chicago. He exhibited a copy of the catalogue which he printed in 1848.

* *

— J. L. GOBEILLE of the Gobeille Pattern Company, Cleveland, was warmly greeted at the convention. Everybody remembered his musical treatise of the previous year, and the question was often repeated, "Have you your violin with you?"

* *

— J. H. WHITING of the Whiting Foundry Equipment Company, Chicago, looked in at *The Metal Worker* headquarters. Mr. Whiting is patiently waiting for the "moving of the waters," when large and profitable business will make stove manufacturers as well as all other foundrymen overhaul their appliances and put in the most modern improvements.

— M. J. POWERS, manager of the Albany Facing Mill Company, successors to E. D. Ransom & Co., Albany, N. Y., was one of the trade representatives in attendance upon the convention.

* *

J. J. LEONARD of the Toledo Stove Company, Toledo, Ohio, exhibited circulators of the Palace Gem heater which his company have recently brought out. This is stated to be a remarkable heater, accomplishing wonderful results. In appearance it resembles an oak stove, but it is so constructed that it is a base heater and air circulator. It is made with a large base to contain the base heating flues, which are arranged differently from those of the standard base burner and are claimed to be much more effective in throwing out heat near the floor. The stove is constructed with a movable magazine, to be used for hard coal and removed for soft coal or wood. An automatic attachment opens the direct draft damper when the feed door is opened for feeding soft coal. The stove is a base heater when used with any kind of fuel. The ventiduct is of large capacity and can either be used in heating the room containing the stove or an upper room.

* *

— A GREAT MANY familiar faces were missing, notwithstanding the large attendance at this convention. The strongest proof of the permanence of the organization is perhaps seen in this fact. An association which constantly receives fresh blood is in no danger of becoming moribund.

Foundry Cost.*

BY W. H. FFAHLER.

Mr. President: You have asked me to present for the consideration of the convention of the National Association of Stove Manufacturers a paper on foundry cost, forgetting perhaps that it was a subject which carried with it the entire scheme of foundry practice, and therefore can only be hinted at in a paper which must be brief, if it would deserve to be heard at a time when there are so many things else to consider.

I have said that foundry cost underlies the entire system of foundry practice, and yet, broad as the expression may seem, I mean every word of it. In outlining and establishing the foundry plant, the question of cost of plant must be considered in relation to value of output, as well as cost of receiving supplies and distribution of product. Cheap gas might induce the location of a plant in a locality where the only dividend would be gas.

In deciding upon the class and kind of stoves to be made, the cost of patterns must be carefully considered in relation to the quality and attractiveness of goods, as well as their adaptability to the purpose for which they are made, and their ability to compete on the line of progress with other makes. The stolen pattern may be cheap, but enduring prosperity seldom follows the pirate.

Having the plant and patterns, the cost of material and labor cuts a very important figure in placing a manufacturer in the line of success, and yet cost must be measured not only in price but in value received. How many of us

can testify to the saving of 50 cents per ton in the price of pig iron, and facing a loss of \$2 or \$3 a ton in the gangway.

The material purchased, the cost of labor is not always great because of high wages paid, when such wages produce more than lower paid help can accomplish; while it is equally true that high wages do not always guarantee profitable returns, therefore the greater necessity of measuring cost by results.

Having all these things, next is the cost of management, or superintendence. Do we ever make a change in this department because of salary paid? Or do we tire of paying a salary because we fail to get the desired results? If the latter, then cost of superintendence must certainly bear a just proportion to output or product.

Without going further, let us stop at the foundry door and treat only of the product ready for shipment, and leave the cost of selling for further consideration, because in this the merchant must take the place of the manufacturer, and when he does he only becomes a successful merchant when he can sell his goods at a price which will represent the three important factors of cost, selling expense and profit.

There is no other foundation upon which to build, and cost lies at the bottom, and this cost cannot be an aggregate or lump cost, but must be a specification, showing the individual cost of each article produced.

If your customer would buy from you a bill of goods consisting of:

1 base burner stove.....	\$30
1 round oak stove.....	18
1 cannon stove.....	10
1 box stove.....	6
Total	\$64

And because he had paid \$64 for four stoves, being an average of \$16 each, would make the selling price of each stove \$20, you would brand him as an idiot, and after he had disposed of the base burner and the round oak stove he would no doubt find out that you were right; at least, if he did not discover it you would when you attended the meeting of his creditors. And yet, foolish as this statement appears, it is no more foolish than the practice of the manufacturer who puts iron, sand, wages, patterns, mica, ash pans, postage stamps, &c., into his cupola, and then calls it all melted iron, dividing the cost by the number of pounds, and then again multiplying the weight of iron in the stoves he makes by the cost of iron per pound, without any regard whatever as to the relative value of all the different items entering into the cost of each separate stove.

I think that every manufacturer knows the cost of his product, if he keeps any books at all, just as a very estimable housewife once told me that she knew what it cost to keep house, because her husband gave her \$15 every Saturday and she spent it all and could get no more to spend. But in these times of competition it is necessary to know more than lump cost in order to learn which goods can be sold at a profit and to learn where saving can be made in the cost of manufacture.

It is because of my belief in the necessity of a practical knowledge of costs in detail, and because of the actual results obtained in the practice of determining a cost system in the business of the company whom I serve, that I plead for the more careful study of the subject, and trust that the facts which I may state in this paper may provoke a discussion leading to the

* Read at the convention of stove manufacturers held in Chicago, May 1, 1895.

further adoption of the cost formula prepared several years ago by the committee appointed for that purpose.

This committee gave to the work its most careful thought, and aided by the untiring energy of our lamented secretary, succeeded in securing its adoption in a large number of foundries, and I am pleased to learn from those who are using it that the results are a full compensation for all the labor and expense attending the work.

Value of a Cost System.

I do not think that there is room for an argument as to the value of a proper cost system, but I do think that we should lend our thoughts to the effort of simplifying our cost system so that it can be adopted by every foundry, whether large or small, and thereby secure a uniform system of figuring cost, which would without a doubt insure a uniform idea of value, and tend to a greater uniformity of selling price.

To this end I trust that every member of the National Association will, at this meeting, state fully the difficulty he may fear in adopting the formula, because I believe at the end of such discussion that your Committee on Costs can frame a plan which will fully meet the requirements of every member.

There are two classes of manufacturers, as there are two ideas of cost.

1. The one who wants to know his exact cost, and bases all his business upon it. For him there is nothing satisfactory but a system which will tell him facts, diversified and divided to any extent which may be necessary to the critical knowledge of every part of his product.

2. The one who does not care to know cost, which also includes the one who does not dare to know cost, and for his purpose imaginary cost is sufficient, and all his business is based on this system, the results of which are scattered all around us in demoralized prices and unnecessary addition to the value of goods without corresponding increase in price.

This second class of manufacturer thinks that he knows enough about cost when he imagines that he can sell his goods 5 per cent. below his neighbor because of some apparent difference in conditions. For instance, there are some founders who fondly imagine that their product, because it is made in a small foundry where the boss wheels his own iron to the cupola, must cost less than that made in a large foundry with a sufficient equipment of machinery; who, if results could be compared, would find that the percentage of unproductive cost as compared to the product was the larger in his case.

Again, they imagine that because they save the salary of a manager or superintendent their product costs less, but never stop to compare results obtained.

Yet again, they imagine that because they do not spend their money attending stove conventions they can afford to sell a larger stove than their neighbor for the same money.

I do not think that any of this latter class are ever quite satisfied that they are right, but they go on basing all their business on imagination because of their inability to compare cost with results, and for this reason I feel quite sure that no system, however simple, can be of service unless the diffused costs, which means all items that cannot be applied as specific parts of a stove, are so arranged that they may become a percentage addition to the known or specific cost.

The Percentage Question.

It has often been stated that the cost formula was not used because the percentage, as indicated in the examples shown, did not correspond with the experience of every member. The intention of the committee in publishing the examples in the cost formula was only to show the method of obtaining and using the percentage for foundry cost, and not to make a uniform percentage, because we found that by comparing results in different foundries the percentage would vary. But while this is true, the investigations made by D. M. Thomas during the past few years clearly demonstrate that the difference in foundry cost will not vary over 5 per cent. between any number of foundries, and to any one who will think of it this seems very reasonable.

To illustrate this is only one point: Suppose a small foundry makes only 1000 tons of castings per year. One of the partners is foreman in the foundry, another foreman of the mounting room, and each draws \$25 per week; the cost of management would be \$2600 per year, or \$2.60 per ton. Compare this with a foundry making 2000 tons of castings per year, who employ a general superintendent at \$2000, foreman of molding room, \$1200; foreman of mounting room, \$1200; total cost, \$4400, \$2.20 per ton.

Yet it very often occurs that the men in the first case named, because they do their own work, believe they are making goods at a less cost, and proceed at once to sell them at a lower price, to find out at the end of the year that they have not been able to make out of their business anything more than their wages, and that no more than they could have obtained for their services in any foundry, and without the risk and cares of conducting business.

Estimating Cost of Stoves.

The practice of estimating the cost of a stove can never be made of value, because the items which go to make up the cost are not all absolute and cannot be applied to that stove; in fact, there is not one item that can be called a fixed sum, and therefore a plan of applying a percentage which will cover all of the diffused or distributed cost is the only plan which will spread this cost over the entire plant.

If a foundry could be devoted to making but one thing or one size of stove, it would be very easy to determine by any method the cost of each stove produced. If there were 9600 stoves made in a year, and the foremen of molding and mounting rooms were paid \$1200 each, or \$2400 per year, then the cost would be 25 cents per stove, but when you attempt to divide the cost among stoves of all classes and sizes, it is simply impossible.

Now, if we suppose that the same foundry makes 9600 stoves of different sizes and styles, and that the value of iron, molding, mounting, bolts, urns, brick and other absolute items is \$28,000, then the cost of \$2400 for superintendence of molding and mounting room is 8.3 per cent.

Now, if the cost of labor and material is ascertained in each stove, no matter whether it is \$3 or \$30, when 8.3 per cent. is added, then that stove has borne its share of superintendence in just the same proportion as if they were all precisely alike; and at the end of the year the owner would find that his cost was provided for, instead of wondering why, after selling all his stoves at a supposed profit, he had nothing to show for it.

Illustrations could be multiplied to show the decided advantage of a percentage system, but I have never found any careful stove manufacturer who could dispute it, and therefore it seems to me that the subject to discuss is how to bring this system into general use, by making it so simple and flexible as to be adapted to the needs of every foundry, large or small. There must be a careful inventory, if true cost is to be determined, and the essential point in an inventory is to determine, in connection with the purchasing account, the exact cost of all material used.

If you find on hand at the beginning of the year 100 tons of pig iron castings at \$13 per ton, your account would show as follows:

On hand January 1, 100 tons at \$13.	\$1,300.00
Purchased during the year, 100 tons at \$12.....	13,200.00

Total, 200 tons.....	\$14,500.00
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On hand December 31, 90 tons at \$15.....	900.00
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Iron used, 110 tons.....	\$13,510.00
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or an average cost of \$12.17 per ton. Now it does not matter what your cupola shows, or what your melter says, nor does it signify whether any of your iron was stolen or wasted; you have expended this amount of money for pig iron, and if you have purchased 1300 tons of perfect castings your cost of pig iron per ton of castings is \$10.40 per ton.

Starting with cost of pig iron, \$13.500, if we add cost of molding and mounting (the actual cost of pay roll), and all sums paid for nickeling, edge polishing, japsanning, mounting material, and every other item which can be made to apply to a particular stove, you will then have the fixed or absolute cost.

2. The main point is to determine the diffused or distributed cost, because this is the item which, if guessed at, will always produce errors in estimating prices, doubt in marking selling price and disappointment in profit at the end of the year.

It is safe to assume, and absolutely sure, that every dollar expended in your manufacturing department, other than the fixed items enumerated above, must be covered by adding them to the fixed cost before determining the selling price, or paid out of supposed profit, and when the total sum of money expended is ascertained, it is very simple to determine what relation it bears to the fixed cost and the proper percentage is found.

To follow the illustration from an entirely imaginary standpoint we will suppose that the absolute cost amounts to \$50,000; then if the general manufacturing expenses, which shall be the entire cost of manufacturing labor, superintendence, engine expenses, patterns, insurance, taxes, interest, repairs to real estate, &c., amount to \$20,000, the percentage of expense to be added to absolute cost on every stove would be 40 per cent.

Cost Register Book.

The book prepared by the committee was designed to be used and is very convenient for registering the cost of each stove, assuming that the books of the firm have been kept in such a manner as to obtain all items necessary to making up the percentage cost.

I think, however, that one of the main difficulties now seems to be the keeping of the account without great labor or expense, and believe it would be profitable for the association to prepare a book which should be a book of account, and which would only require

the entry of the items as they occur and simplify the account so that they could be used by any one.

It is presumed that in every business some one person has the final approval of payments, and under the direction of such person there would be no difficulty in having the entries made properly on the ledger.

For the firms who keep books by double entry it is entirely practicable to have all payments made by the proper officer and charged to an account called "Disbursement Account," regardless of what they are paid for. The bill or voucher, when approved, is marked for the department or item to which it should be charged and entered into a disbursement book, and at the end of the month the amount expended can be distributed by journal entry into each department account. I have placed on the secretary's desk a page from a book of this kind in use by our company, which reduces the work of dividing accounts to a very small item of labor, and yet has the strength of proof because the division of accounts must equal the entire amount of money expended if books are in balance.

For the foundry which keeps only simple books of accounts, a cost ledger, in which would be entered all money expended under three columns, one called absolute cost, the other called divided cost and the third called total cost.

This book on the desk of the book-keeper would make it easy for him to enter every payment at the time it was made, and at the end of the year, when the inventory was made up, he would have all the items needed to complete a cost account in a very short time.

Asking your pardon for the length of this paper, I can assure every member of the association, based upon the experience of our own company and supported by every firm who has adopted the cost formula, that the results obtained have in every case more than compensated for the cost and labor expended.

Obtaining Smooth Castings.*

BY W. HALES.

The question of how to obtain the smoothest face on castings is one that is not as easily answered as most foundrymen would like. There are many things to contend with which are perplexing even to the most experienced. To get a facing that is perfectly fire proof is almost impossible, owing to the nature of some iron and sand.

I have used iron that would (if improperly mixed) cut the best facing on the market, causing it to be condemned by those who thought themselves thoroughly acquainted with the business, when at the same time the fault did not lie with the facing, but with the man not knowing how to mix his iron. Then, again, I have seen foremen at sea with facing by reason of their sand being too open, not having enough body in it to hold the facing, being so open that both facing and sand would cut (or roll) before the iron, giving the castings a dirty appearance, as though so many worms had gone over the face.

A moderately close sand and a proper mixture of the iron will turn out a better looking casting with a medium facing than first-class facing, poor sand and badly mixed iron will do, the latter having a great deal to do in producing a smooth face on castings. A

foundryman had far better trust to experience than to knowledge gained from agents in regard to iron, sand or facing, or in fact anything in the business.

I prefer a good lead facing for first dressing, that is moderately pure—I say moderately, because it is impossible to get pure lead, it being mixed more or less with silica, iron, lime, alumina, &c., and also adulterated by the manufacturer. In second dressing, good charcoal, with a small proportion of good soapstone, ground together, will make a good return facing. The soapstone has a tendency to prevent charcoal from cutting, giving the casting a lighter and smoother appearance.

Some foundrymen use lime, others cement. Both are bad elements, and in either case will give the casting a rough appearance, but at the same time will stop the facing from cutting to some extent. I have used wheat, bean and pea flour with good results by shaking on after the mold is finished. The glutinous substance in the flour both molten and binds the facing, preventing it from cutting, leaving no bad effects, rough casting or bad marks, such as lime or cement will leave. Hard iron or iron improperly mixed will spoil a good facing. This is the cause in most cases. Get this right and the facing will be an easy matter to overcome. Iron should be mixed by analysis. Get a mixture that will give strength, face and color. Careful mixing will correct evils that are often supposed to be in the facing or sand.

I am a believer in both drying and bolting sand. There is so much vegetable matter in it that it sometimes works great injury to the face of a casting and should be taken out of it as far as possible. But the question arises, will it pay?

By the system that most foundries work under large quantities of sand are thrown into the gangway by the riddling process. In some cases it is wasted; others use it for the cupola bottom in place of new sand, and in my opinion it makes a better bottom; for, being mixed with the burned sand of gates and castings, it is rendered more open, allowing the gases to escape more freely than does new sand. My experience in drying sand is to place a quantity of heavy cast plates over flues in sand room, level with floor, put a moderate fire under them, throw sand over them and keep turning the sand to prevent burning. When dry, either roll or grind it; then screen it so as to get as much vegetable matter out of it as possible. This greatly assists in making a smooth face and also prevents loss of both sand and castings. Most of the loam and clay in the sand, after being dried or ground, passes through the riddle and is not wasted.

J. P. LINDEMANN & SONS, Milwaukee, Wis., are distributing among their friends in the trade a postal card calling attention to the New Gem gasoline stoves. Among other things the announcement printed on the back of the postal card says: "If you have not yet secured the sale of this celebrated stove and appreciate a specialty that is plastered over completely with patents and that your competitor can't get, you should lose no time in sending to us your name, with a request to send catalogues and prices." Lindemann & Sons are Northwestern agents for Dangler vapor stoves, made by the Dangler Stove & Mfg. Company of Cleveland, Ohio.

ODD PLATES.

THE NUMBER of foreign shipments of oil and gasoline stoves and of coal stoves of a character adapted to the requirements of what may be called tropical America is far greater than is generally known. It is claimed by some South American travelers that it would be found a profitable venture to send a competent representative salesman to this vast territory and deal direct with the merchants. The goods are now largely sold by importing and exporting houses as a mere incident in their general business, so that the foreign merchant does not come directly in contact with the American merchant and manufacturer. The advantages of such a business contact would be a more lively interest on the part of the American manufacturer and an increased confidence on the part of the buyer. It would enable the buyer to explain the special requirements which must be met to suit the peculiarities of his trade.

THE CLEVELAND FOUNDRY COMPANY, Cleveland, Ohio, have issued a neat catalogue devoted to their lines of lamp stoves and furniture for same. They state that their lamp stove furniture is interchangeable on their various lines of lamp stoves, and this important feature does away with the necessity of carrying so many lines of furniture in stock. Their pattern department is hard at work on new sizes and styles of register patterns, with which they are increasing their extensive line of these goods.

FRANK GROF, corner Seventh avenue and Eighth street, New York, makes a specialty of brass fire fronts and fire place trimmings. He either designs goods suited to finish and furniture of a house, or manufactures from special designs furnished.

WALTER S. STEVENSON and CLARENCE V. ROBERTS of Thomas, Roberts, Stevenson Company of Philadelphia, Pa., were granted on April 30 a patent for a design of a cook stove or range, among the special features covered being the elevated boiler shield, the front plate of the elevated warming oven, the door thereof and the lower warming oven door.

THE CARTON FURNACE COMPANY of Utica, N. Y., refer to the automatic electric heat regulator as a device which can be attached at small expense to any of the various heating systems. The apparatus is said to be free from complicated parts and requires no attention beyond winding once or twice a week. The company issue a fully illustrated and descriptive catalogue of the regulator, which they will forward for examination to those interested. The company are calling attention to this regulator by means of a neat folder printed in two colors.

LAZARD KAHN of Hamilton, Ohio, has assigned to F. & L. Kahn & Brothers of that place his interest in a patent recently granted for a gas stove. The device consists of a pair of vertical flues which are open below and form the end walls of an open front chamber. In this chamber is a gas burner, and over it is a horizontal pipe which connects the two flues mentioned. From this horizontal pipe and extending upward is also a radiating flue open at the top, while its base is in communication with the open front chamber. The stove is mounted on a leg base, and is surmounted by a hollow top or capital, having an outlet provided with a pipe collar.

* Read at the convention of stove manufacturers held at Chicago May 1, 1895.

WALTER S. STEVENSON of Thomas, Roberts, Stevenson Company of Philadelphia, Pa., has recently been granted a patent for a design for the front of a stove or hot air furnace, the special features covered being the top and side panels and the damper plate.

THE FOREST CITY STEEL RANGE COMPANY of Cleveland, Ohio, have recently been incorporated, with a capital stock of \$40,000. The incorporators are J. R. Couch, James E. Burdick, C. L. V. Evans, Norton W. Cope and John U. Helser.

THE CHAMBER OF COMMERCE BUILDING at Detroit, Mich., was opened last week with imposing ceremonies, a public reception being held in the afternoon and a banquet in the evening at the Hotel Cadillac. At the formal opening of the building the secretary read the historical sketch of the enterprise, which showed that the Detroit Chamber of Commerce was organized January 5, 1892, with 249 charter members, George H. Barbour being elected as first president.

THE MAY CALENDAR issued by the Joliet Stove Works of Joliet, Ill., is of the same general character as its predecessors. The blotting pad upon which the calendar is printed is embellished with a landscape scene and a marine view, together with some remarks relative to Moore's air tight heater. Special reference is made to 1895 pattern of this construction, which is said to be as far in advance of anything on the market as was the first Moore's air tight heater in 1891.

GEORGE WILLIAM GRAVES, 11 Chestnut street, Rochester, N. Y., issues a postal card calling attention to the concerns which he represents and the lines of goods which they manufacture. Special reference is made to the goods of Eugene Munsell & Co., Schneider & Trenkamp Company, the Steel Clad Bath Company and the Niagara Brass & Iron Works. The postal also gives a list of prominent dealers in Syracuse, Utica, Rochester and Albany, at whose showrooms samples of the Reliable gas ranges and gasoline stoves made by the Schneider & Trenkamp Company can be found.

A PRESS DISPATCH from Baltimore this week gives a horrid story of what was termed an explosion of a gasoline stove which resulted in injuries to a number of persons present. The "explosion" was described as happening in a "sweat" shop in that city. We have no knowledge of the facts of the case in this particular instance, but it strongly calls to mind an experience which we heard related not long ago. A person interested in the subject made an inspection of a number of buildings in Baltimore where fires from gasoline had occurred with unusual frequency. He found a number of stoves in use in sweat shops and on a visit to one of these places as he came from the room he noticed a small child carrying a basin in its arms filled with what appeared to be water. Theodor of the fluid, however, proved it to be something else, and investigation discovered that the child was carrying the supply of gasoline into the house for which he had been sent to a neighboring store. It need only be borne in mind that gasoline is highly inflammable; that its evaporation will be proportional to its exposed surface, and then the danger of carrying it into a house in an open basin, where very likely there is a fire of some sort about, will be readily appreciated. If that particular basin had caught fire and

resulted in the destruction of the building the newspapers would most likely have reported it as a "gasoline stove explosion."

THE CHICAGO & ERIE STOVE COMPANY of Erie, Pa., favor us with a copy of a pamphlet which they have just issued relating to various lines of Gas Helper ranges and heaters. Among the interesting features to which particular attention is invited is a canopy shelf which the company have just brought out, and which is so made that it can be attached to any of their gas ranges. In the back of the canopy shelf is a register opening connecting with the smoke pipe, for the purpose of carrying off the steam and odors arising from cooking operations. When the register under the shelf is closed the draft of the pipe is through the oven, the makers claiming that by this means the draft of the pipe may be adjusted either way, as desired. The company have also brought out for this season a water heater designed to take the place of water front in a range or cook stove, which may be used in connection with a range if so desired. The two sides and one end are made of two thicknesses of sheet steel with asbestos board between in order to prevent the radiation of heat. One end of the heater is cast iron and can be easily removed for the purpose of taking out the burner or reaching the coils, of which there are eight, composed of 1-inch pipe with $\frac{1}{2}$ inch connections. The "returns" on the water coil have "plugs" which can be opened to remove sediment from the pipes. The water heater has one large burner lighted by means of a pilot, and the makers state that a 40-gallon tank can be heated in one hour. Another novelty is the Gas Helper hot plate, fitted with four burners and intended to be placed on top of an ordinary wood or coal range for use in the summer months. It saves heating up the kitchen and can be removed at any time when the coal range or stove is needed for extra work. The 16 page pamphlet which the company have issued also shows an open front heater of nest design, known under the name of Invincible and intended for using both natural and manufactured gas. Various sizes of the Gas Helper range are shown and the pamphlet is likely to prove of interest to dealers generally.

THE HIGH VENTIL HEATER AND HEAT-REFLECTING COMPANY of New York has been incorporated to patent, manufacture and market heating apparatus, ventilators, reflectors, grates, &c., with a capital of \$50,000; the directors are: Spencer H. Hewlett of St. Louis, William Bryan of West New Brighton, William Langdon, John Cinnamon and Richard E. Van Ingen of New York City.

THE NOVELTY MFG. COMPANY of Jackson, Mich., are the assignees of a patent for an oil stove recently granted to Charles H. Boeck of that place. The patentable features consist in the peculiar construction, arrangement and combination of parts. The frame of the stove is of conventional design with an opening in the top. At the lower portion of the frame is supported an annular oil tank provided with a central burner tube which projects above and below the tank and which, with the tank, may be withdrawn laterally from the frame. Around the opening in the top of the frame of the stove is a depressed flange which supports a ring having short radial arms and which at the inner end carries a depending ring,

the latter having at its lower edge an inwardly extending flange. The lower end of the combustion chamber is provided with a cone which rests upon the top of the burner tube and forms a tight joint with it. The arrangement of parts is such that the combustion chamber may also be lifted out through the opening in the top by simply removing the inner griddle which supports the cooking utensil.

THE MICHIGAN STOVE COMPANY have issued another number of *The Garland Magazine*. This issue has a cover designed by Bradley, the famous Chicago designer of posters, which is printed in Gobelin blue on pale green paper. It is therefore a work of art which should be carefully examined when received. The magazine contains a great variety of articles calculated to amuse and interest every member of the family, including the musically inclined. The words and music of a waltz song, "The Roses are Blooming for You," are given. Scattered through the magazine are illustrations of some of the company's stoves, and the telling points of each are briefly enumerated. Both heating and cooking goods are shown. One who reads this magazine carefully will surely be converted into an enthusiast on the subject of Garland stoves and ranges.

ALBERT N. PARLIN of the Magee Furnace Company, Boston, arrived in New York late last week on the steamer "Columbia," from Southampton, England, and spent Sunday with John M. Sweeney, manager of their New York office at 242 Water street.

The Born Steel Range & Mfg. Company

of Cleveland and Galion, Ohio, have just issued from the press what is known as Catalogue F. It is a substantial volume measuring $7\frac{1}{2}$ x 11 inches, printed on heavy paper and bound in dark green paper covers with slide title in old gold. The goods illustrated comprise steel plate French ranges, broilers, carving and steam tables, pastry ovens, coffee and tea urns, laundry and tailor stoves, water heaters, &c. The volume is arranged with a great deal of care, and in connection with the illustrations is given ample descriptive letterpress so as to enable the trade to note the various features claimed for the goods. Among the more important points in connection with the steel ranges made by this company is the fire box, which is large and deep, ample direct flues, sectional top plate, drop oven door, top warming closet, oven bottom so made that all danger of warping is obviated and so simple in construction that any one can remove it in a few minutes without drawing the fire, and cased cement bottom which is used under the bottom flue. The body of the range is made of steel plate of heavy gauge, and in the ends and parts which are exposed to direct heat the plate is double thickness, with sheets of asbestos between, and all securely riveted together. The goods illustrated are made under the name "Born," and are adapted to meet requirements ranging from those of the small family up to the largest hotel. A feature of the catalogue are engravings representing the kitchen interior of a private dwelling and of the Kennard Hotel of Cleveland, Ohio. Complete kitchen outfits are considered in the closing pages of the volume.

TRADE REPORT.

The Iron Market.

The markets have been completely upset by the renewal of the labor troubles in the two valleys and the sudden outbreak in Chicago. The feeling in the trade seems to be that a higher range of wages is inevitable and that the buyer will have to stand the increased cost. So far the disturbances have been among the unskilled workmen, but it is evident that the Amalgamated Association is endeavoring to pull itself together in the West, and may succeed in causing widespread idleness a little later on. Even in works in which sliding scales are operative disappointment among the men at their slow upward movement may create trouble.

As regards the New York market, Northern furnaces have not yet advanced their prices, but they are doing a good business and find buyers more willing to pay the prices asked. We do not learn of any business at the advance for Southern Irons, which will have to wait until a higher level is reached by local Irons. The Lowmoor Company has advanced its prices 40¢ a ton, making their No. 1 \$13 and their No. 2 \$12. We quote \$12 @ \$12.50 for No. 1; \$10.75 @ \$11.25 for No. 2, and \$10.25 @ \$10.50 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.75 @ \$11 for No. 2; \$10.5 @ \$10.75 for No. 3; \$10.50 @ \$10.75 for No. 2 Soft, and \$10.75 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10 @ \$10.25.

The Philadelphia Pig Iron market is reported in a very satisfactory condition from a seller's point of view. It is easy to do business at the old prices, and in some cases not difficult to get a small advance, but there is a considerable discrepancy in reports, and for that matter a considerable discrepancy in quotations. For the present Southern Irons are not in it alongside Pennsylvania Irons, prices for the latter remaining almost stationary, while the former are probably close on to 50¢ dearer. The result is that Southern Irons are not being sold to any extent, while Pennsylvania makes are very freely taken. It is understood that low priced contracts will all have expired by the end of next month, after which the higher cost of Pig Metal will necessarily involve a higher cost for the product. Sales have been on a large scale during the week under review. General quotations are as follows for Philadelphia and 30¢ @ 50¢ less for deliveries at points within 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.50 to 10.75
No. 1 Soft.....	11.50 to 11.75
No. 2 Soft.....	10.75 to 11.00

In the Chicago market a healthy business has been done in local Coke Iron, but no large orders have recently been placed. An indication of the improved feeling is the occasional duplication of orders by recent buyers. Southern Coke has been comparatively quiet, yet a fair volume of business is reported. Lake Superior Charcoal ap-

pears to be moving in small lots only. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern Silvery, No. 1.....	12.00 to 12.25
Southern Silvery, No. 2.....	11.75 to 12.00
Southern Coke, No. 2.....	10.50 to 10.75
Southern Coke, No. 3.....	10.00 to 10.25
Southern, No. 1, Soft.....	10.50 to 10.75
Southern, No. 2, Soft.....	10.25 to 10.50
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	15.00 to 15.50
Other Ohio Silvery.....	14.25 to 14.50

In the Pittsburgh district furnacemen are asking about 25¢ more for their iron than a week ago. Foundry Irons are reported dull and neglected. Quotations are given as follows, for cash:

No. 1 Foundry.....	\$10.50 to \$10.75
No. 2 Foundry.....	10.00 to 10.25

A lull more or less pronounced has prevailed in the market for Pig Iron in Cincinnati during the past week. Buyers of Southern Pig have not followed the furnaces in the latest advance. Contracts for round amounts have been postponed, and orders for present delivery have been cut down to as low a point as possible. The market, however, is unsettled and new developments are expected at any moment. Taking into consideration the disposition of buyers and the attitude of sellers the volume of business has been quite satisfactory. No contracts embracing large amounts given on long deliveries are accorded, but the aggregate sum of small orders, for Foundry goods, Coke and Charcoal, Northern and Southern make, have been encouraging, as showing a fair industrial activity and a gradual increase in the smelting of Iron. Quotations are given as follows:

Southern Coke, No. 1.....	\$10.00 to \$10.25
Southern Coke, No. 2.....	9.50 to 9.75
Southern Coke, No. 3.....	9.00 to 9.25
Southern Coke, No. 1 Soft.....	9.50 to 9.75
Southern Coke, No. 2 Soft.....	9.00 to 9.25
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	11.00 to 11.50
Hanging Rock Charcoal, No. 2.....	10.50 to 11.00
Hanging Rock Charcoal, No. 3.....	10.00 to 10.50
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The Pig Iron market in St. Louis is reported as being quiet. Most of the large consumers have their wants already supplied and the smaller trade are in much the same condition. The month of April was without doubt the best month so far as volume of business is concerned that any of the local agents have experienced for at least four years past. Notwithstanding the absence of any large business, prices are firmly maintained and furnacemen refuse to shade prices as quoted below. Efforts have been made to secure lower prices for good round lots, but they did not succeed. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.25 to \$10.50
Southern Coke, No. 2 Foundry.....	10.00 to 10.25
Southern Coke, No. 3 Foundry.....	9.50 to 9.75
No. 1 Soft.....	10.00 to 10.25
No. 2 Soft.....	9.75 to 10.00

THE MISSOURI BRASS TUBE FOUNDRY COMPANY of St. Louis have filed articles of incorporation; capital stock, \$50,000; incorporators, C. A. Mennel, W. J. Kenefik, Frank Lehoag.

Metal Market.

Pig Tin.—Wholesale prices for both prompt and future deliveries have been carried higher during the week. It was only where special conditions, such as right of seller to double, that deals up to and including July delivery were made at less than spot price. Still, out of town trade has been accommodated at prices remarkably close to official quotations, and there is other evidence that some prominent holders have been quietly unloading Tin while not only supporting but nursing the higher level of values. Speculation otherwise has been moderate and mainly in the form of closing out old deals between prominent operators. Market gossip has it that there is a considerable short interest here and in London, and deliveries on contracts thus far this month, it is also noticeable, have been well taken care of. Behind this is the substantial fact that prices have been raised in both markets, in the face of what is considered a bearish statistical position. Jobbing business has been of very fair volume, while prices for small lots from store had advanced, in sympathy with the wholesale market, about $\frac{1}{2}$ ¢ lb, the current retail quotations being 15 $\frac{1}{2}$ ¢ for Strats Pig and 16 $\frac{1}{2}$ ¢ a 17¢ for Bara. Banca, in small lots, rules at 16 $\frac{1}{2}$ ¢ lb.

Copper.—An advance in price of Lake Ingot of about $\frac{1}{4}$ ¢ lb has taken place in the wholesale market, with a corresponding rise in Electrolytic and Casting stock. Speculation is accountable in a measure for the rise, but the substantial fact remains that consumption is heavy and that deliveries on contracts, while quite free, are well taken care of. There is an impression in the trade that late "bears" have turned "bulls," and there is some indication also that they have been instrumental in raising prices. Retail business has been quite fair, with good inquiry. While prices for small lots of Ingot are not notably higher, they are very firmly held and are expected to be advanced if the present rise in raw material here and abroad is maintained. Small parcels of Lake Ingot from stock rule at about 10 $\frac{1}{2}$ ¢ lb.

Sheet Copper.—The demand for manufactured Copper has displayed a considerable increase. Some good contracts have been placed within the week for Cornice Copper, and several heavy orders for this material will, it is believed, shortly materialize in this section. Consumers are evincing more interest in purchasing and inquiries are more frequently followed by actual business than has been the case of late. The outlook for a good summer business is regarded as bright. The probability of an early advance in the price of Manufactured Copper is discussed with considerable interest. Quotations on small lots of Sheet Copper from store are as yet unchanged at the net list rate of 14 $\frac{1}{2}$ ¢ lb.

Pig Lead.—Buying has been somewhat larger and chiefly by prominent consumers not far distant from cor-

roders. Naturally they kept as much pressure as possible to bear and dealers acted more or less in harmony. Prices for Common Western, both for prompt and future delivery, are, however, still at the same low level. The home consumption, by all accounts, is quite heavy, but export business is not as prominent a factor as it was a short time ago. Small business has been fair, with prices for moderate sized lots of American Pig from store unchanged at 33¢ @ 34¢ $\frac{1}{2}$ lb.

Lead Pipe and Sheet.—More favorable reports are gathered from the plumbers' supply trade than have been offered for some time past. All the factories are busy and orders are booked ahead for the coming two months. Inquiry is very active, and the indications are that stocks are being generally replenished. The present activity in the building trade in this section promises a large and increasing business in manufactured Lead in the coming months. Prices in this section are maintained on the list basis of 54¢ for Pipe and 54¢ for Sheet Lead, subject to a discount of 20 %.

Splter.—There has been more business, chiefly in carload lots for early delivery, and prices have hardened somewhat, although showing no radical change. Consumption is reported as being heavier, not only in the Galvanized Iron trade, but in Brass manufacture. Prices for small lots from store are steady at 34¢ @ 4¢ $\frac{1}{2}$ lb. for good Western brands.

Antimony.—Aside from ordinary jobbing movement there has been little doing and prices are still rather soft at about 8¢ for Hallett's and 9¢ for Cookson's, in small lots.

Solder.—Demand has been fairly brisk, while prices have advanced in sympathy with that of Pig Tin. Small lots are quoted at 14¢ for $\frac{1}{2}$ and $\frac{1}{3}$ guaranteed, and 9¢ @ 10¢ for No. 1.

Sheet Zinc.—A notable flurry has taken place in the market for this material within the last few days, owing to the increase in the volume of demand from consumers. Stocks in the hands of dealers have been allowed to run very low in the last year or two, and the sudden expansion in demand caught them in a condition of unreadiness to meet it. The supplying mills also seem to be short of stock, and it is said that one has been obliged to send to this city for a considerable quantity of Sheet Zinc of their own manufacture in order to meet a pressing order received at the mill within a day or two. Prices have advanced sharply, a rise of 3¢ $\frac{1}{2}$ lb having been made by the producers on Thursday. The advance in jobbing prices has been still larger, it being difficult to obtain 600 lb casks under 54¢ $\frac{1}{2}$ lb, while it is found utterly impossible to fill any orders of large size. Small broken lots from store rule at about 6¢ $\frac{1}{2}$ lb. Whether the advance will be permanent or whether it is merely a temporary flurry remains to be seen; but it is hardly thought that the present prices can be maintained after stocks are again filled up.

Tin Plate.—In the wholesale market a better business has been done in Cokes for future delivery. Spot sales of both Cokes and Charcoals have also improved to some extent. The movement of large business, however, is still only moderate, and hardly up to what might be looked for at this time of the year after the dullness experienced last month. Distribution has been, however, considerably larger in the retail

trade, where the aggregate of moderate sized orders has reached a very respectable volume during the week. Roofing Plates, both American and imported, have secured a considerably larger demand, and inquiry for all descriptions of Plates is noted by the jobbing houses to have been larger than for some time past. The outlook for business in Roofing Plates within the next month or two is held to be extremely good. The reduction in stocks abroad has caused a stiffening in the market for Welsh Plates, which is beginning to be felt in this market also. Stocks of imported Plates are not at all excessive, and the assortment is quite poor, a number of special sizes being almost entirely out of the market. American brands are, however, being offered in considerable volume, and at prices which compete successfully with foreign material. The market at the close of the week showed a better tone than it has displayed for the past two months, with prices firm at last week's quotations.

A special cable dispatch from London, dated May 8, to *The Iron Age*, reports on the British Tin Plate market as follows: Tin Plate has been steadier in price, but business has continued slow, and dealers are still cautious and purchase only for immediate wants. Offers are more plentiful, with rather higher rates in some instances, but the quantity of Plates booked was small, owing to curtailed production and light stock. Quotations, f.o.b. Wales, are as follows: Bessemer Cokes, 10 14 x 20..... 9/ @ 9/3 Siemens Cokes, 10 14 x 20..... 9/4 @ 9/2 Terns, 20 x 28..... 11/ @ 11/6 Charcoals, 10 14 x 20..... 11/ @ 13/6

Sheet Iron.—The activity in the demand for Black and Galvanized Sheets, referred to last week, has continued, and prompt shipments are almost impossible to be had from any of the mills, many of which are said to be filled up with orders as far ahead as July 1. Some of the leading manufacturers are not inclined to quote prices on Galvanized Sheets, but no increase in price has been agreed upon by the mills as yet. The jobbing demand for Galvanized Iron from the smaller roofing trade is larger than for a long time. Prices are held quite firmly, small lots of No. 27 Common Iron being quoted at \$2.70 @ \$2.75 $\frac{1}{2}$ lb Galvanized Sheets rule at 75 % and 5 % @ 75 % and 10 %, according to size of order and conditions of delivery.

Chicago Report.

Scrap.—Business has recently been less active in this vicinity. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton. Per lb
No. 1 Wrought Scrap.....	\$6.50
Machinery Cast.....	5.50
Malleable Cast.....	5.00
Store Plate (free of burnt).....	4.00
Burnt Iron and Grate Bars.....	3.00
Sheet Iron and Hoops.....	2.00
Plow Steel and Breaking Stock.....	4.00
No. 2, such as Shovels, Hoes, &c.....	3.00
Old Boilers—whole (iron).....	3.00
“ (iron)—cut in single Sheets and Rings.....	5.00
Old Gas-Pipe and Boiler Tubes.....	5.00
Cast Borings.....	3.00
Turnings.....	4.00
Horseshoes.....	7.50
Copper Bottoms.....	6
Copper Clips and Heavy Y.....	6
Heavy Brass.....	6
Light Brass.....	3
Pipe Lead.....	2 1/2
Tin Lead.....	2
Zinc.....	2 1/2
Rubber.....	4

Anthracite.—An improved demand is noted. The upward movement in other lines is causing people to think about buying Coal. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.60 \$4.75
Milwaukee, Wis.....	4.60 4.75
Kansas City, Mo.....	7.80 7.95
Council Bluffs, Iowa.....	7.80 7.95
Lincoln, Neb.....	7.95 8.10
Sioux City, Iowa.....	7.80 7.95
Aberdeen, S. Dak.....	7.85 8.00
Dubuque, Iowa.....	5.90 6.05
Madison, Wis.....	6.10 6.25
St. Paul, Minn.....	7.10 7.25
Burlington, Iowa.....	6.10 6.25
Des Moines, Iowa.....	7.60 7.75
Davenport, Iowa.....	5.90 6.05
St. Joseph, Mo.....	7.80 7.95
Leavenworth, Kan.....	7.80 7.95
Omaha, Neb.....	7.80 7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.55

CONDITION OF THE

Hardware Trade.

THE MARKET continues in about the same general condition as for the past week or two, but it is evident that there is a somewhat improved feeling in regard to the outlook for business. Trade is very fair in volume, and while merchants as a general rule are not disposed to buy beyond their requirements there are some lines of goods which are regarded as a safe purchase, there being, in the judgment of experienced parties, more probability of an advance than a decline. This has some effect in giving the market a better tone. It is also noticeable that prices on some goods are a shade firmer, and that the changes which are being announced are nearly always advances rather than declines. While these changes are not very important they are significant as indicating the tone of the market. In some lines of goods, especially seasonable articles, there is some delay on the part of manufacturers in filling rush orders, and on some staple goods the stocks in manufacturers' as well as merchants' hands are light.

Advices from Chicago.—The Shelf Hardware jobbers report a remarkably heavy trade now in progress. The copious rains which have recently prevailed through the West have done a great deal to improve the situation, as they have encouraged the farmers everywhere, and also caused dependent interests to look up considerably. The hot weather of the past week has also caused season goods to move much more freely. All kinds of summer goods are now in active demand, and stocks in jobbers' and manufacturers' hands are moving off rapidly. A feature of the situation is the improvement in mail orders. Merchants cannot wait for traveling men to visit them. They are in need of goods to meet the actual demands of their customers. Prospects are brighter than ever, many new stocks being in sight, and a disposition being shown by the established trade to anticipate wants for a reasonable time. The Tin Plate trade is very much better. The most important change in prices recently made is in Wood Screws. Manufacturers have advanced their printed prices to 87 1/2 per cent. The jobbers will probably make their bottom price

85 and 20 off. Important Government contracts for Indian supplies will probably be awarded in this city during the coming week. Competition for these contracts was vigorous and the result is awaited with much interest.

Notes on Prices.

Wire Nails.—As referred to in our last issue, the Wire Nail market is characterized by an improved tone. No conclusion has been reached in the negotiations with a view to improving the general situation and giving the market more regularity than has heretofore characterized it. The matter is still under advisement and some who are closely identified with the movement are hopeful that it may be successful. In the mean time the trade are purchasing quite freely, though there is little of the speculative element in it. Buyers are watching the market closely, so as to be in a position to place orders if there should be a marked tendency toward better prices. Manufacturers, on the other hand, are refusing to accept orders except for early delivery. Small lots from store are held at \$1.10 to \$1.15.

Advices from Chicago.—Manufacturers have enjoyed a very heavy trade since our last report. The situation has so decidedly improved that there are now very few sellers at the old basis for factory lots. Jobbers have advanced their prices to \$1. Joliet, for carload lots. This ends the long contest on Wire Nails, which began early in January.

Cut Nails.—The Eastern Cut Nail market continues as at our last report. The prices agreed upon by the manufacturers are quite well adhered to. They are as follows for small lots, on dock, 90 cents, and from store, in New York, 95 cents, the above quotations all being made on the basis of 60-cent average, with an advance in the base price where the average is less. The volume of business is fair, and the trade are anticipating that it may continue steady for some time.

Advices from Chicago.—The situation shows no change. Manufacturers report a continued fair trade running to moderate sized lots only. Small lots from stock are held at \$1.

Barb Wire.—The Barb Wire market is without change so far as prices are concerned, the quotation of \$1.80 for carload lots of Four-Point Galvanized at mill being a representative one, though concessions are sometimes made on attractive orders. An excellent demand is reported and the factories are making heavy shipments.

Advices from Chicago.—A much larger business has been done the past week, and second orders are now coming in from buyers in many portions of the territory covered from this district. All factories are extremely busy and are falling behind in their shipments. Quotations are unchanged. Small lots from stock are held at \$1.60 for Painted and \$1.95 for Galvanized.

Screws.—The Russell & Erwin Mfg. Company, New Britain, Conn., and New York, have issued under date May 1 a circular giving advanced prices on Wood Screws, the same as those announced in our last issue by the American Screw Company. The revised discounts are as follows:

	Discount per cent.
Flat Head Iron	87½
Round Head Iron	82½ and 10
Flat Head Brass	87½
Round Head Brass	82½ and 10

Flat Head Bronze Metal	82½ and 10
Round Head "	80 and 10
Flat Head Iron Screws, Blued, 5 per cent. advance on net.	
Patent Diamond Point, Oval Head, ...	87½, 10 and 10
Patent Diamond Point, Flat Head, ...	87½ and 10
Patent Diamond Point, Round Head, ...	82½ and 10
Flat Head, Nickel Plated on Iron	75
Round Head "	72½
Flat Head, Nickel Plated on Brass, ...	66½ and 6
Round Head, Nickel Plated on Brass	66½

The trade will be pleased to note this further indication of improvement in the condition of the Screw market, which is undoubtedly characterized by better tone than a few weeks ago. The American Screw Company and Russell & Erwin Mfg. Company are the only manufacturers who have up to this writing announced advanced prices.

Sea Green Roofing Slate.—John Galt & Sons, 253 Broadway, New York, are issuing a card of the prices for No. 1 Sea Green Roofing Slate, in carloads, adopted by the Vermont Slate Company on May 2. The prices, which are subject to change without notice, are as follows:

28 x 14	22 x 14	
22 x 11	16 x 12	
30 x 11	16 x 10	\$2.75
30 x 10	16 x 9	
18 x 10	14 x 12	
	16 x 8	
26 x 14	14 x 10	
24 x 14	14 x 9	\$2.25
24 x 12	14 x 8	
20 x 12	12 x 10	\$2.65
18 x 12	14 x 7	
18 x 11	12 x 9	
18 x 9	12 x 8	\$2.00
	12 x 7	

Spray Pumps.—In our issue of last week we illustrated a new line of Spray Pumps which F. E. Myers & Bro., Ashland, Ohio, are putting on the market. These Pumps are sold from the following list, subject to a discount to the trade of 55 per cent.:

Barrel Spray Pump, with strainer, agitator and air chamber	\$11.50
Imperial Brass Spray Pump	5.50
Knap sack Sprap Pump	5.50

Mop Holder.—The Arcade Mop Holder, described in *The Metal Worker* of 4th inst., and put on the market by the Arcade Mfg. Company, Freeport, Ill., is sold to the trade at \$1 per dozen, net.

Conroy Fastener.—The new automatic Refrigerator Door Fastener, manufactured by P. J. Conroy, Paschali, Philadelphia, Pa., is sold to the trade from the following list, subject to a discount of 40 per cent.:

Ornamental.	Highly Polished.	Nickel Plated.
Per dozen.	Per dozen.	Per dozen.
103.....\$12.00	\$14.00	\$15.00
104.....9.00	10.00	11.00
105.....7.50	8.00	9.00

Palm Oil.—The recent increase in the demand for Palm Oil for Tin Plate manufacturing purposes has caused a stiffening in the price of this product. The standard brands now in the market, with their prices, are as follows: Fancy Lagos, 5½ cents; Clarified Lagos, 5 cents; Accra, 4½ cents; Half Jack, 4½ cents per pound, in casks of about 1500 pounds.

Old Metals.—Business is fairly good, but enough material is offered to prevent any quotable advance in prices. Scrap Iron in this section has shown more activity during the past two or three weeks and higher rates are talked about, but have not yet materialized

in quotations. Dealers' purchasing prices for moderate sized lots, New York or Jersey City delivery, are about as follows:

Heavy Copper	7¢
Light and Tinned Copper	6¼¢
Heavy Brass	4½¢
Light Brass	3½¢
Lead	2½¢
Tea Lead	2½¢
Zinc	2½¢
No. 1 Pewter	10¢
No. 2 Pewter	5½¢
Wrought Scrap Iron, gross ton	\$7.50 @ \$8.00
Heavy Cast Scrap	gross ton 7.50 @ 8.50
Stove Plate Scrap	gross ton 5.00
Burnt Iron	gross ton 3.00

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Metal and Miscellaneous Prices.

CHICAGO, MAY 9, 1895.

Tin—

Granite pigs.....10c@10 1/2c
 Imported Tin Plates—
 Charcoal Plates—Bright.

Guaranteed Plates command special prices, according to quality.

	Per box.
IC, 10 x 14.....	\$5.50
IC, 12 x 12.....	5.50
IC, 14 x 20.....	5.50
IC, 16 x 28.....	5.50
IC, 18 x 36.....	5.50
IC, 20 x 44.....	5.50
IC, 22 x 52.....	5.50
IC, 24 x 60.....	5.50
IC, 26 x 68.....	5.50
IC, 28 x 76.....	5.50
IC, 30 x 84.....	5.50
IC, 32 x 92.....	5.50
IC, 34 x 100.....	5.50
IC, 36 x 108.....	5.50
IC, 38 x 116.....	5.50
IC, 40 x 124.....	5.50
IC, 42 x 132.....	5.50
IC, 44 x 140.....	5.50
IC, 46 x 148.....	5.50
IC, 48 x 156.....	5.50
IC, 50 x 164.....	5.50
IC, 52 x 172.....	5.50
IC, 54 x 180.....	5.50
IC, 56 x 188.....	5.50
IC, 58 x 196.....	5.50
IC, 60 x 204.....	5.50
IC, 62 x 212.....	5.50
IC, 64 x 220.....	5.50
IC, 66 x 228.....	5.50
IC, 68 x 236.....	5.50
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THE METAL WORKER.

NEW YORK AND CHICAGO.

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The Boom in Wall Street.

During the past week or two the attention of the business world in this country has been irresistibly attracted toward Wall street. The stock market, after two years of almost unexampled dullness and depression, has suddenly sprung into exuberant life and activity. Prices of securities have shot up in a remarkable manner, and the volume of speculation and investment business recorded day by day has, in some cases, exceeded anything of its kind known in this market for a number of years past. The responsibility for this change in the aspect of American securities is due mainly to enthusiastic purchasing by foreign investors. Nevertheless, a vast amount of domestic speculation has also figured in the market. Business, however, has been by no means confined to speculation simply, as a very large amount of sound investment buying is recorded. The return to subscribers of 40 per cent. of the amount paid out by the syndicate of bankers who purchased the \$62,000,000 of Government gold bonds three months ago has thrown a vast sum of available money on the market, which is now loaning at about the cheapest rates ever known. Naturally a considerable proportion of these funds finds its way into speculative business on the Stock Exchange, and this, with the other favorable occurrences before referred to, has sufficed to create the boom which has taken place on "the street." It is said that over \$80,000,000 of American stocks have already been placed abroad, and the appetite of English investors for "Americans" is by no means yet satisfied. A continuance of this movement will go far toward making up for the \$300,000,000 of our stocks and bonds which were sent back from abroad during the late depression. How long this activity in speculation will be kept up it is diffi-

cult to guess at. Some authorities assert that this is only the beginning of a revival in values which will continue through the summer. Others, on the contrary, incline to the opinion that the current boom is likely to be transitory, and that the present high tide will subside again before long. It should not be lost sight of, however, that there are a number of favorable features in the present situation which may very probably operate toward a maintenance of the present range of values in our securities. Railroad earnings are beginning to show a very decided improvement. Industries are resuming operations on every hand and are rapidly giving employment to the idle. Prices of staples, as well as of many manufactured products, are all tending toward higher levels. Wages are being advanced in many industries, and a comparison of the returns of bank clearings show that the general trade movement in the country is making very considerable advances. On the whole, it may be said that a general and substantial improvement in the business situation has set in, which, provided no unforeseen calamity, such as failure of crops, intervenes, should carry the country to as high a level of prosperity as it has ever reached before.

The Philadelphia Commercial Museum.

There has been established lately in the city of Philadelphia a municipal institution, under the name of the Philadelphia Economic and Commercial Museum, which in its scope and usefulness is of more than local interest. The museum, which is a purely public institution, is under the direction of a board of trustees appointed by the city. The personnel of this board is a sufficient guarantee of recommendation, including as it does some of the most influential and respected citizens of the Quaker City. The principal officers of the board are William Pepper, M.D., LL.D., president; Charles H. Cramp, vice-president; Clarence H. Clark, treasurer, and William T. Wilson, Sc.D., secretary and director of the museum. The declared aim and object of the museum is to further the interest of the American manufacturer and consumer, and in general to build up our foreign commerce. Its work includes the collection of natural products from all the countries of the world which have already entered our markets or which may be made available for them, together with samples of manufactured products from foreign countries which may serve as aids to our own manufacturers. The most important parts of the exhibits

from Mexico, Central and South America, Australia, South Africa and many Asiatic countries, at the World's Columbian Exposition, were, at its close, removed to Philadelphia, and they form the nucleus of the present collection. These exhibits, renewed and further extended, are to be permanent features of the museum; and similar products from all other countries are being rapidly added to the collection. In order to secure the best advantages for the American manufacturer and consumer these products are brought before them so that they may make the best selections of material for their own special interests.

A Boon to Manufacturers.

The directors of the museum propose further to publish all possible scientific and useful information concerning these products which may aid the manufacturer and consumer in their choice. A bureau of information has also been established, whereby useful information is furnished concerning all markets which it is thought our merchants and manufacturers can enter or control. Detailed information as to source, cost of production, selling prices, import duties, manner of packing, patent rights, &c., will also be furnished; and through the publications of this department co-operation and exchange will be effected with the leading commercial, scientific and educational museums of the world. The leading feature of the undertaking is the establishment of special periodical exhibits in various fields of trade manufacture. At the present time there is being displayed an exhibit of foreign wool, which is creating great interest among the members of the wool trade in the United States. The next large exhibit will be the hard woods of the world, which, it is said, will embrace the largest permanent collection of woods ever brought together.

According to recent European dispatches, M. Paschal Grousset has made a singular proposition in connection with the International Exposition, to be held in Paris in 1900. It is the digging of a pit 1500 meters deep, from which point borings would be made to the depth of another 1500 meters, with a view to ascertain if the center of the earth contains a large supply of stored up heat. This idea has caused a great deal of talk in Parisian scientific circles, and Professor Munier-Chalmas, director of the Laboratory of Geological Research at the Sorbonne, and M. Marcel Bertrand, lecturer at the Ecole des Mines, who are among the most eminent geologists of France, have declared themselves as distinctly favorable to the scheme.

THE LETTER BOX.

Expansion of Metals.

From A. H. J., *Beauford, S. C.*—Please answer the following questions in the Letter Box: What metallic wire is most susceptible to expansion and contraction during changes of temperature, and to what extent does the contraction go (costly metals not considered)? Given a wire of most susceptibility $\frac{3}{16}$ inch in diameter and 100 inches long at 100° F., what contraction would take place for each 10° reduction in temperature down to 30° F.?

Answer.—The common metal that has the most expansion and contraction is zinc, but we do not know whether our correspondent's purpose would be fulfilled by using a zinc wire. The expansion for each degree Fahrenheit in a zinc wire 100 inches long would be $\frac{1}{1000}$ inch, and as the ratio is constant, for 10° it would be $\frac{1}{100}$ inch. So in a wire 100 inches long at 100° F. the contraction would be to $99\frac{9}{100}$ inches at 90° F., $99\frac{8}{100}$ inches at 80° F., while at 30° F. it would be $98\frac{7}{100}$ inches. Lead wire has about the same expansion as zinc, being a trifle less. If, however, it is desired to use one of the hard wires, the greatest expansion is found in brass. In a brass wire the expansion is $\frac{1}{1000}$ inch in 100 inches for each degree of temperature. For each 10°, therefore, the reduction in length as the wire was cooled would be $\frac{1}{100}$ inch.

Is It Sanitary?

From H. B. J., *Birmingham, Ala.*—In reference to sketch of plumbing work submitted by "B. C. H." in *The Metal Worker* of May 4, I would say that there is nothing sanitary about it. In the first place, it should be back vented to take the back air out 6 inches above the urinal. Secondly, the stack of soil pipe should be carried through the roof the full size, which is 2 inches. As for its siphoning, it will not do so as long as the stack continues through the roof. Even if the regulations in any city should not require that the fixtures be back vented if they are within 5 feet of the stack, any sort of a plumber ought to know better than not to do it.

Quick Running Solder.

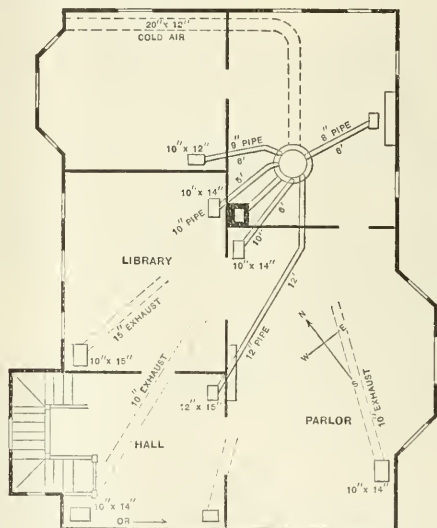
From H. O. I., *Kentucky.*—Please tell me how to prepare a quick running solder that I can use for soldering block tin.

Answer.—We believe the solder used for this purpose consists of the ordinary soft solder, to which is added a little bismuth. The proportions are variously stated; one formula which we have seen gives tin two parts, lead one part, bismuth one part. Sometimes, however, the amount of bismuth is increased up to as much as three parts.

A Balky Furnace.

From A. H. P., *Detroit, Mich.*—In answer to "J. H. W.," who makes an inquiry in *The Metal Worker* of April 20 as regards the solution of a balky furnace problem, I would suggest that, as he cannot change the location of the furnace, he could get good results by following the directions I have marked on the sketch. One objectionable feature of this job is that the pipes all run from one side of the furnace; and then, according to my ideas, his pipes which run to down stairs rooms are too small. I have marked the sizes which I would use and the sizes of registers. I think he will find it a very easy matter to run his furnace to the satisfaction of all

upward, so that it will run to the ceiling of the kitchen, where it should turn down and run to the boiler, connecting it at the top of the hot service. This method of piping will enable the water in the water back to escape to a higher point when it has become hot and make room for the water to flow into the water back from the boiler and thus start a circulation. If he desires a good circulation he should have a large water back and at least a 1-inch pipe and small boiler. The 1-inch pipe should be connected straight to the boiler, the hot water service pipe being taken from a T in the pipe. This method of piping is used often in hot water fitting when a stack of indirect radiation is located at some distance



A Balky Furnace.

concerned if he will return exhaust ducts from the hall, library and parlor, with the registers located as I have marked them on the sketch, and with pipes of the size shown.

Kitchen Boiler Below Range.

From SYPHON, *Newark, N. J.*—I notice the communication of "P. S. J." in *The Metal Worker* of May 11, and would advise that he find some place in the kitchen for the boiler. It is unreasonable to expect a plumber to supply hot water to a building unless he has a fair chance. It is unnatural for water to circulate freely through such a system as he has shown, and if a circulation can be started it will not be that free, frictionless circulation which will be inexpensive and satisfactory. As he requires help, however, I will make the suggestion that he disconnect the pipe from the side of the boiler and put a plug in the opening. The hot water pipe from the water back should turn

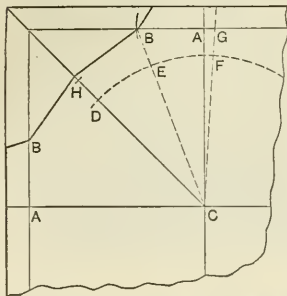
from the boiler and almost on a level with the top of it. In hot water heating an air valve is placed at the top of a siphon, but if any considerable pressure of water is carried on the system the air will be carried out of the siphon when hot water is drawn. In order to prevent the siphon becoming air bound it will be best to place an air valve at the top of it. If the siphon reaching to the ceiling does not secure the circulation it may be necessary to run it up higher. A rule for calculating the siphon height is to provide twice the head above the boiler of the drop to the fixture below it. Another method of piping would be to run the hot water service pipe from the boiler up along the side of the range to supply the second floor. Then the flow pipe from the water back may be connected into this pipe, avoiding the necessity of an air valve. The pipe from the water back to the boiler should be 1 inch in size, but the hot service pipe may be reduced to $\frac{3}{4}$ inch, or the size of the other service pipes, after

leaving the water back branch. The theory of the circulation in cases of this kind is that as the water in the pipe from the water back becomes cool from exposure it has no tendency to ascend, but rather to fall to the boiler, when the water rises in the other pipe to the water back and circulation is started. Such rapid circulation can never result, however, as when the water back is made the lowest point in the system, so that the cooler water will continually fall to it, forcing the hot water to rise.

From H. H., Boston, Mass.—I notice in *The Metal Worker* of May 11 the inquiry of "P. S. J." regarding a kitchen boiler below range. He does not say whether the system is supplied from a tank or from the city main. However, I will suggest, first, that the hot water supply from the range to the boiler should be fixed near the top of the boiler, say about 2 inches below the rivets; second, the system should be under city pressure, using a check valve in the cold water supply to the boiler and an expansion pipe from the top of the boiler, with a safety valve attached. Then the pipes and boiler in the basement should be covered or incased. His customer must not expect as good a supply of hot water as where the boiler is above the range; and he may also expect a little hammering on account of steam and vacuum occurring occasionally within the water back.

Dripping Pan Corners.

From A. W., Watertown, N. Y.—In answer to "A. C.," Milwaukee, Wis., who asked for a method of obtaining



Dripping Pan Corners.—Fig. 1.—Method Suggested by "A. W."

patterns for dripping pan corners, I would suggest the following: After laying out the lines for the bottom and sides of the dripping pan, with the gauge mark around the edge denoting the width to turn over for the wire and the miter line drawn through all the corners, set the dividers to the flare required. For example, if the pan is to be $\frac{1}{4}$ inches larger at the top than at the bottom let the dividers spread $\frac{1}{4}$ inch, and with A as center mark the point with a small arc on the gauge line, as shown at B of Fig. 1. From B draw the short beveling line through that part which is allowed for wiring. This is the mark on which to "notch in" for the wire. After all of the four corners have thus been laid out, draw a line at one of the corners from B to C, as indicated by the dotted line. Now, with the dividers set indefinitely, but less than the depth, and with C as center, describe a quarter of a circle commencing at the original miter line, as at D. Set the dividers from D to E,

swinging them around, and with E as center mark the spot on the quarter circle, as at F. Draw a line through this point from C, as indicated by the dotted line C F G. Now set the dividers upon C and spread them out to the point where the last dotted line intersects the gauge line at G. Swing them to the left and mark the spot upon all of the horizontal miter lines. This we will call H. There is nothing left to do but draw the lines from B to H on both sides of the original miter line, but in doing this, although the point H is correct theoretically, it is necessary to make a little allowance for shrinkage, caused by the doubling up of the iron or tin when the corners are turned. Therefore, the two lines from B intersect the original miter line a little outside of the point H, as shown in the drawing.

From W. N., New York City.—Replying to the correspondent "A. C.," Milwaukee, Wis., I desire to submit a method which is very simple and at the

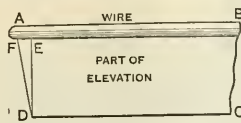


Fig. 2.—Partial Elevation of Pan of Given Flare Accompanying Letter of "W. N."

same time accurate. In Fig. 2 let A B C D represent part of an elevation of a dripping pan with the flare indicated by D F. Having obtained the pattern for the corner so that when folded it will lie parallel with the wire, proceed as follows: In Fig. 3 let A B C D represent the bottom of the pan. At right angles to A B and A C lay off the stretchout of the flare D F in Fig. 2, as shown by E F and G H in Fig. 3. Through the points F and H and parallel to A B and A C draw lines, as shown by P K and K R, which intersect at K. Draw the diagonal line K A. Now extend the lines C A and B

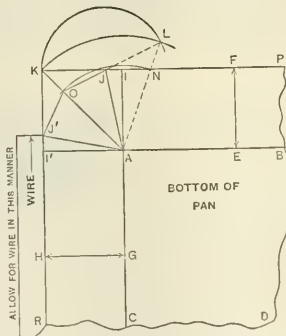


Fig. 3.—Pattern for Dripping Pan Corner Submitted by "W. N."

A until they intersect the lines P K and K R at the point I and I'. Now take the distance of the projection of the flare shown in Fig. 2 by F E and place it as represented in Fig. 3 from I to J on the line P K and from I' to J' on the line K R. Connect the points J A and J' A, which will represent the miter lines, which will join together when the corner is folded. Now, with A as center and the diagonal line A K as radius,

describe an arc, as K L. Then, with J as center and J K as radius, describe an arc intersecting the one previously drawn at L. Make a line from A to L, intersecting the line K P at the point N; connect L and J. Then will the dotted triangle A J L represent the position of the corner if bent on the line J A and will project over the wire. In order that it may be parallel to the wire take A in Fig. 3 as a center, and with A N as radius describe the arc N O until it intersects the diagonal line K A at the point O. Draw a line from J to O and from O J'; then will P J O J' R C A B D represent the pattern for the corner corresponding to the flare shown in Fig. 2 of the sketches.

From F. M. C., Newark, N. J.—I submit a sketch, Fig. 4, and a description of a method of laying out dripping

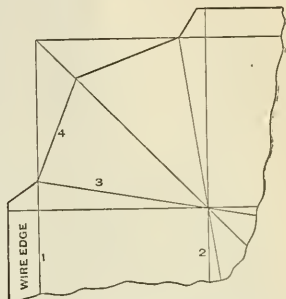


Fig. 4.—Diagram Submitted by "F. M. C."

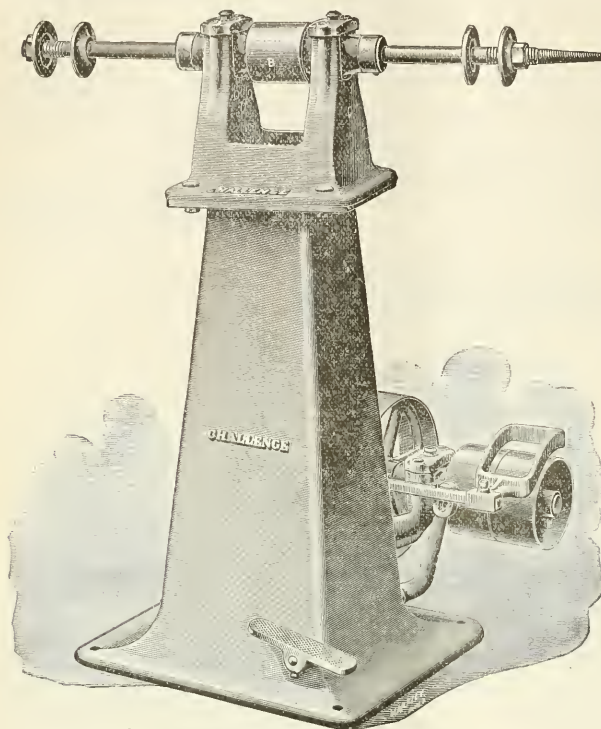
pan corners, for the benefit of "A. C.," who asks for assistance in *The Metal Worker* of April 23, and also for the benefit of the many other fellows who are struggling to make a living. Let the line 1 represent the top of the pan and the line 2 the bottom. The line 3 shows the flare. In making the pattern lay out the size of the bottom, shown by line 2; then add the height for the pan, as shown by the line 1. Lay out the flare for the corner, as shown by the sketch, by taking a bevel and placing one edge on the line 1. Adjust the other edge of the bevel to the line 3 very accurately. After setting the bevel, turn it over and again place it on the line 3, drawing the line 4, as shown. Add width enough to the line 1 to cover the wire which is used to stiffen the edge. This method will give a correct pattern, and is one which I have worked out and never found to fail, no matter what the flare or depth of the pan may be.

Gasoline Insurance.

From D. F. L., Montgomery Station, Pa.—I am glad to see the question of extra insurance for the privilege of burning gasoline in stoves taken up in *The Metal Worker*, as it is a matter of considerable importance to the gasoline stove trade. My customers—some of them, at least—are paying extra premium. I am myself doing the same for the privilege of burning gasoline in a soldering furnace in the shop. One agent asked me \$5 extra and another insured me for \$2.50 extra, which, in my opinion, is unjust. I hope the dealers in gasoline stoves will give this matter their attention, as it certainly does interfere with the sale of these goods.

Polishing and Buffing Machine.

In the polishing and buffing machine made by the Appleton Mfg. Company of Philadelphia the head is so designed that when used as a bench machine it may be belted to a countershaft above



Polishing and Buffing Machine.

or below, the belt to the countershaft below passing through a large opening in the center of the head and leading outside the head to the pulley. There are two styles of bases or mountings provided—a plain one when an overhead countershaft is to be used, and one with the countershaft attached when it is desirable to belt directly to the main shaft. A feature of the latter is the position of the belt leading to the main shaft, away from any irregular pieces being operated upon. The openings for the belt driving the spindle are through the head, as above stated, and through the rear wall of the base, leading outside over all. The boxes are thoroughly protected from dirt, are detachable and convenient for re-babbiting and are self aligning. The machines are furnished with spindles either for two or four wheels and with single, tight and loose or two-step pulley.

Work has been begun on the new East River Bridge which is to connect New York City with Long Island City by way of Blackwell's Island. The foundations on the eastern shore of Blackwell's Island are now in course of construction, and the coffer dams on the shores of the island and of Long Island City are all ready for work. J. Kennard Thompson is superintending the work of construction, with Charles M. Jacobs in charge of the engineering work.

The Old Soho Foundry.

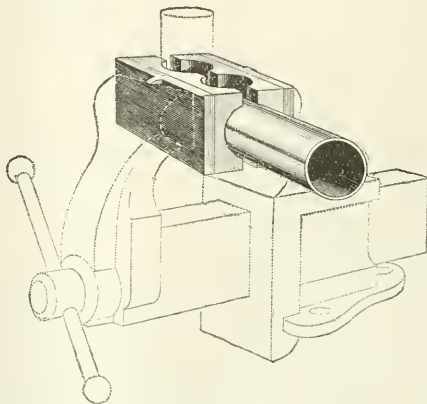
The Soho Foundry, which was built by Matthew Boulton as a relief to the old Soho Works, so well known in every quarter of the world as the "Toyshop of Europe," is, after all, to go the

workpeople in princely style. Entering the foundry the old man addressed the people assembled there in these terms: "I could not deny myself the satisfaction of wishing you a happy and joyous day, and expressing my regard for all good, honest and faithful workmen, whom I have always considered as classed with my best friends. I come now, as the father of Soho, to consecrate this place as one of its branches; I come also to give it a name and my benediction. I will therefore proceed to purify the walls of it by the sprinkling of wine, and in the name of Vulcan and all the Gods and Goddesses of Fire and Water I pronounce the name of it Soho Foundry. May that name endure for ever and ever, and let all the people say Amen, Amen. This temple now having a name, I will propose that every man shall fill his pitcher and drink success to Soho Foundry."

After this remarkable utterance came the benediction: "May this establishment be ever prosperous, may no misfortune ever happen to it, may it give birth to many useful arts and inventions, may it prove beneficial to mankind, and yield comfort and happiness to all who may be employed in it. As the smith cannot do without his striker, so neither can the master do without his workman. Let each perform his part well, and do their duty in that state to which it has pleased God to call them, and this they will find to be the true rational ground of equality."

Vise Jaws for Tubing.

The Newark Machine Tool Works of Newark, N. J., are placing on the market a small and effective device for holding tubing or any cylindrical piece which is too delicate or too highly finished to be held in a pipe vise, as here shown. The jaws are made of the best vulcanized fiber, securely fastened to pieces of malleable iron, which have shoulders to catch on the jaws, as shown in the engraving. The two jaws are correspondingly bored, so as to form, when placed together, cylindrical openings of different sizes to receive the pipe to be held. The jaws nearly encircle the tubing, holding it so firmly



Vise Jaws for Tubing.

pleasant memories, are to be rased to the ground.

It is not often that we hear of "rearing feasts" nowadays; but in 1776, when the Soho Foundry was formally "dedicated," Boulton entertained his

that it cannot slip and with no danger of distorting the tube or marring the finish of the surface. The grooves in the jaws are made to order in any required diameter up to and including 1½ inches.

THE RETAIL STORE.

Equivalent Balance.

John Chatillon & Sons, 85-93 Cliff street, New York, have brought out the Favorite Equivalent Balance, as herein shown. This scale is designed to prove of great utility to manufacturers and dealers in ascertaining quickly and accurately the weight of 100 or 1 gross of a given article by simply weighing a single piece. This method guarantees against mathematical inaccuracies liable to occur, and takes cognizance of in-

to the dealer who remembers the average Lamp stock of a few years ago. Imported vases in delicate materials, elaborately cut Venetian and other glass, pottery from various quarters of the globe and various fine materials are continually being utilized for mountings by the Lamp manufacturer. While great advances have been made on the fine grades of Lamp, the average stock goods of spun brass or cast metal in a multitude of attractive finishes have been elaborated and beautified, and

shades of other delicate materials, these goods are suitable for retailing at from \$15 to \$75.

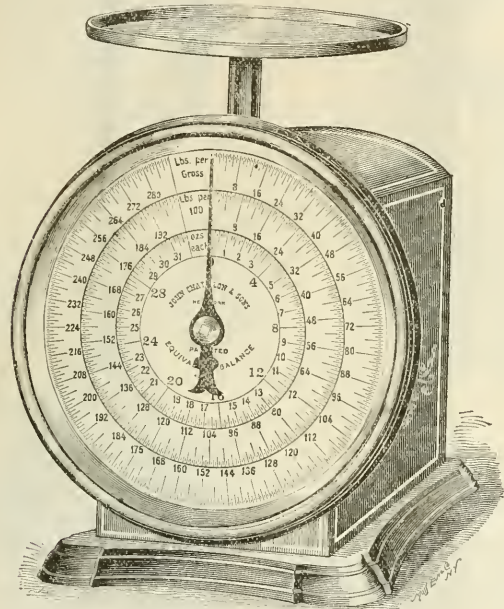
Among the tints in which shades are shown are Nile green, corn, pink, canary, light blue, sunrise, sunset, red, orange, red with black lace, and rose pink, at prices ranging from \$2 to \$25 each.

Other new patterns noted are of Venetian and medieval wrought iron, together with large assortments of regular goods.

They have brought out an addition to their line of Student Lamps, supplied with Juno or Miller burners. The Study Lamp referred to is double, with a reservoir capable of supplying both burners eight hours. The standard is 22 inches high and extreme width over all 18 inches. With the exception of the chimneys and shades the parts are all brass, highly polished and nicked. The arms can be varied to suit purchasers so as to take shades from 6 to 10 inches in diameter. This Lamp is especially recommended for double desks or where two are to be accommodated.

Triumph Self Wringing Mop.

Phoenix Mfg. Company, Cleveland, Ohio, are offering a self wringing mop, as here shown. The wire frame over which the mop is doubled is attached to a sliding ferrule. When wringing, the ferrule is pushed down on the handle and twisted, as illustrated in the cut. By sliding the ferrule up on the handle, where it is held by a spring, the lower end of the mop is



Favorite Equivalent Balance.

significant fractions of little concern in a unit, which in multiples of 100 or 144 would be important. Weights of dozens can be quickly approximated by dividing the gross total by 12. The inner row of figures on the dial gives the weight of one piece up to 32 ounces by $\frac{1}{4}$ ounce, the pointer simultaneously indicating the weight in pounds per 100 on the next circle and by the gross on the outer row. Adjustment is made by a thumb screw at the top.

The Lamp Trade.

Manufacturers of lamps are getting their new patterns ready for exhibition, and before the close of May lamps intended largely for the fall trade will be displayed in the various sample rooms for the inspection of critical buyers.

This season of the year in the Lamp industry, while passive with regard to the marketing of this important product, is practically the culmination of the designers' efforts in striving for substantial results in the way of advances on former creations. The immense displays of all kinds, styles and finishes in this important industry are a revelation

placed before consumers by the trade at a much reduced cost as compared with former prices.

Edward Miller & Co.

Edward Miller & Co., 10-12 College Place, New York, have completed the radical alterations and changes made necessary by the widening of College Place. Their front on the new street has been rebuilt, giving them five excellent display windows with single plates of glass. The interior has been thoroughly renovated and electrically lighted. Entire new lines of samples of Hand, Parlor, Banquet, Boudoir, Piano, Hall, Library, Student and other Lamps are elaborately displayed for inspection.

In their large Centennial show case, which is practically a separate room, they have assembled a number of fine examples of rich goods in Drawing Room and Banquet Lamps. The metal bases and heads are gold plated and mounted on vases of Royal Teplitz, Royal Worcester, Crown Derby and Baccarat Ware, richly decorated. There are also some unique specimens in onyx, and gold and silver finishes. Complete with chiffon and feather shades and



Triumph Self Wringing Mop.

brought near the mop head ready for mopping the floor. The design of the device is to avoid the necessity of putting the hands in scalding water to wring the mop, and to allow the use of scalding water, as being more effective in cleaning than water in which the hands could be safely immersed when wringing the mop. The Phoenix mop cloths are referred to as elastic, pliable, light and strong, as absorbing water like a sponge, and as also being adapted to use with any ordinary mop stick.

The Sterling Coal and Gas Range.

The increasing popularity of gas as a fuel for cooking in the summer season has led to the production of the Sterling coal and gas range by the Sill Stove Works, Rochester, N. Y. A sketch of this range, with parts broken away to show its special features, is presented herewith. The range has all of the qualities of a first class coal range. The fire box has a Dockash grate, so arranged that the entire grate can be drawn out through the front of the range in case repairs are needed. It also

is stated that when this range is used with coal and gas the cook has at command nine griddles, two large ovens and a large broiler. With this range the extra expense of a summer stove is unnecessary. It is stated that the gas cooking attachments can be connected with the range at any time, and it is not necessary, when undesirable, to purchase the complete combination.

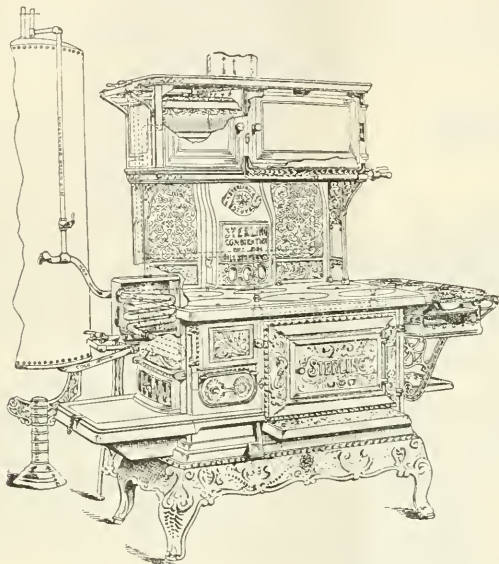
Cream City Mug.

The Gender & Paeschke Mfg. Company, the well known manufacturers of tinware, at Milwaukee, Wis., are com-

This Sweeper is adapted for use in churches, lodge rooms, hotels and other places where large sized sweepers are required; and the offer of the fans is to aid the dealer in selling the Sweeper and at the same time give him a permanent advertisement.

Wire Broom Fly Killer and Display Stand.

M. D. Jones & Co., 368 Washington street, Boston, Mass., are introducing



The Sterling Coal and Gas Range.

has an end hearth with a patent lift cover and a large ash pan. The oven is large and provided with a transparent and ventilating double door. For coal it is provided with a reservoir when desired. The flues are arranged in a way that is said to insure successful baking under any conditions; and it is this coal range which has been made as a combination gas apparatus. At one side of the high hot closet a gas burner is arranged in the top for broiling, and at the other side a burner is placed both above and below to insure an even heat at the bottom and top of the oven for baking. All odors and steam that rise from cooking with the broiler and oven are carried directly to the chimney through flues. At the end of the range, usually occupied by a warming table or reservoir, three cooking burners are arranged in the form of a bracket attachment, which can be readily adjusted. A water heater is placed behind the range and connected with the water front in such a manner that they may be used alone or both together. When only the gas heater is used, it is recommended that a pipe shall be led from the side connection in the boiler to the hot water service connection at the top, to insure hot water being furnished in a short time after the burner has been lit. The burners used in the different appliances have been carefully graduated and constructed to secure superior results with the minimum consumption of fuel. It

is stated that when this range is used with coal and gas the cook has at command nine griddles, two large ovens and a large broiler. With this range the extra expense of a summer stove is unnecessary. It is stated that the gas cooking attachments can be connected with the range at any time, and it is not necessary, when undesirable, to purchase the complete combination.



Cream City Mug.

City mug, a cut of which is shown herewith. The article is described as well made and low priced and it is expected will have a large run during the picnic season.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich., are offering to send free with each Bissell Grand Sweeper 50 Japanese Flat Fans with the dealer's advertisement on the back.

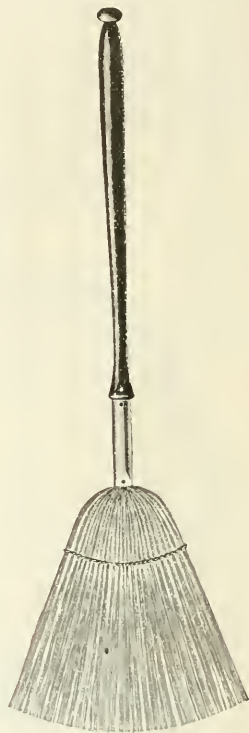


Fig. 1.—Wire Broom Fly Killer.

the Wire Broom Fly Killer which is shown herewith by an illustration one-third size. The article is a broom made of very light wire attached to a short handle by means of a metal ferrule securely pinned to the stick. The bristles are held in shape by a cord braided

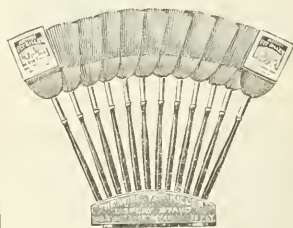


Fig. 2.—Fly Killer Display Stand.

through, as shown in Fig. 1. The manufacturers claim that the broom kills but does not crush the fly or other insect. It cuts the air and gives the fly no warning of its approach, as is the case

with a newspaper. For hardware dealers the killers are put up one dozen in a box, and a display stand, as in Fig. 2, is sent free with the first order.

Nestable Strainer Pails.

The Nestable strainer pails herewith illustrated are offered by Sidney Shepard & Co., Buffalo, N. Y. The pail has

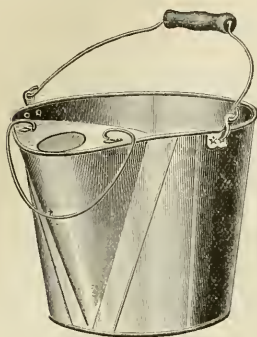


Fig. 1.—Nestable Strainer Pail.

a broad lip and strainer attachment, while the attachment is adapted to use muslin in addition to the strainer, if desired. It is explained that should customers object to the detachable strainer, it is arranged so that it can be readily soldered fast by a tinner in a short time. The nestable feature enables the dealer

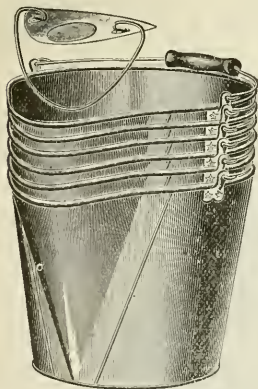


Fig. 2.—Strainer Pails Nested.

to store a dozen pails in the space usually occupied by two pails. The manufacturers remark that they have not sacrificed the essential qualities which dairymen require, and that without taking into account the nestable features, they consider the pail unequaled.

ANNOUNCEMENT IS MADE that the American Wringer Company, 99 Chambers street, New York, have sold the patents and good will of their business in Cork Pullers, Milk Shakes, Lemon Squeezers and Ice Shaves to the Erie Specialty Company of Erie, Pa., who will hereafter manufacture this well-known line, including the Samson Cork Puller, Imperial Milk Shake, Imperial Ice Shave and Acme and Fifth Avenue

Lemon Squeezers. The Erie Specialty Company state that they will maintain the high standard of excellence which these goods have attained, and intimate that with their facilities for manufacturing they are in a position to give orders prompt and careful attention.

Polar Ice Pick.

The Dana Hardware Company, Boston, Mass., as selling agents for Estes & Co., Nashua, N. H., are introducing the Polar ice pick shown in the accompanying illustration. The action of this pick is similar to that of a nail puller. The head, which is heavy cast iron, slides down the steel awl $2\frac{1}{4}$ inches, thus mak-



Polar Ice Pick.

ing very little arm force necessary to be put into the blow. The pick is finished in nickel and japan.

MEMORANDA.

READING HARDWARE COMPANY, Reading, Pa., advise us that they are in receipt of many orders for Apple Parers, which they refer to as significant of a conviction on the part of the trade that the apple crop throughout the country this year will be a large one. In consequence of the increased demand for their goods and to avoid getting behind their orders the company have issued a circular to their customers in which they request an anticipation of their wants in this line, thus insuring prompt shipment and receipt of the goods.

THE LEACH ROASTER & BAKER COMPANY, Paxton, Ill., have changed their name to the Paxton Hardware Mfg. Company. They have also increased their capital stock from \$8000 to \$30,000.

THE R. H. GALE MFG. COMPANY, Duluth, Minn., have been incorporated, with a capital of \$50,000, with the following officers: B. Silberstein, president; Edward A. Silberstein, secretary and manager; O. C. Hartman, treasurer and R. H. Gale, superintendent. The company will manufacture the Nickeline

stove polish, the making of which was first commenced last October, with much enlarged facilities.

THEODORE PHILIPP, dealer in stoves, hardware and tinware, crockery, lamps and glassware, has sold out his business in Silver City, Idaho, and is at present building a store at Jerome, Arizona, where he will continue the same business. He is desirous of obtaining catalogues, prices and discounts of goods in the lines which he intends to handle.

THE COMSTOCK-CASTLE STOVE COMPANY of Quincy, Ill., have recently purchased the hardware and stove business of Seymour Castle, and will, about June 1, open a large store at 530 Main street, in the city named. The new store will be restocked with a large assortment of goods adapted to the requirements of the stove and hardware trades, and the establishment will be in charge of J. M. Welsh of the Welsh & Parish Hardware Company of St. Joseph, Mo.

THE CONDENSED CATALOGUE of factory and railroad milk cans is just received from the Buhl Stamping Company, Detroit, Mich. It is a handy little volume of 40 odd pages and gives all essential information concerning their extensive line of milk cans, stock and dairy supplies. Various forms of cans are illustrated and prices given, as well as lists of sizes. In all some 18 different styles of finish of cans are shown, while trimmings and parts are similarly illustrated and described.

JOHN W. SMITH & SON, 264 West Twenty-eighth street, New York, make a specialty of chimney sweeping in large buildings and fine residences. They have recently cleaned the chimneys of the Hotel Netherlands, Hotel Savoy and the Holland House, New York City, and are now busy in cleaning chimneys of some of the palatial residences in and near New York.

George Pinkham, Topeka, Kan., is manufacturing a pump which is designed to meet the requirements of those who are obliged to pump water for irrigating purposes. The water is lifted by rotating steel blades, and it is stated that a single horse working in a treadmill can raise an incredibly large quantity of water.

Building operations in Philadelphia during the month of April were the largest in volume reported for the last two years. The estimated value of permits and operations during the month was \$4,202,842, which was nearly twice the total for April, 1894, and one-third larger than for the same month in 1893. The most satisfactory feature of this exhibit is the fact that no great buildings have contributed to swell the total, new construction being almost entirely in the field of small dwellings, such as those which are inhabited by the wage earning class.

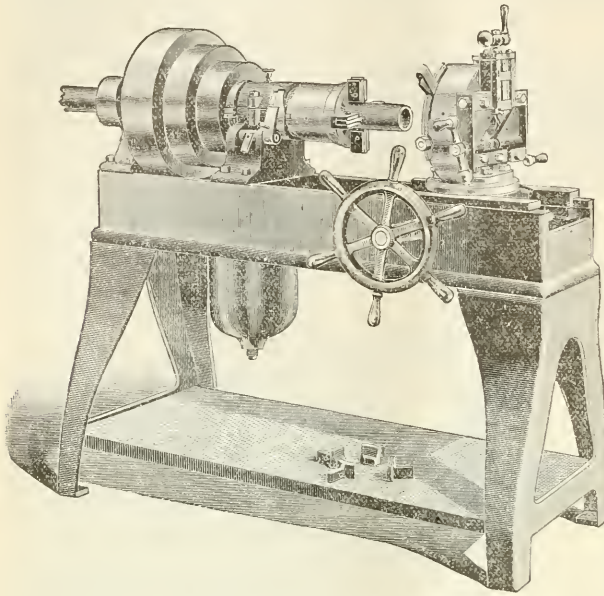
According to estimates just completed by the New York Board of Health, the population of the city now exceeds 2,000,000. The municipal census recently taken will shortly give the exact figures, which are not yet known.

The first bicycle ever brought to this country was, it is claimed, owned and ridden by Robert Center of New York, who was killed last recently while riding his wheel in Central Park.

The Merrell Nipple and Pipe Mill Machine.

The machine which we illustrate was designed and built with special refer-

chasing cutting any style or pitch of thread. In operating it is but necessary to insert the pipe, start up the machine, move the dog to close the vise, move the head to the pipe, and the machine does the work. This machine is made



The Merrell Nipple and Pipe Mill Machine.

ence to rapidity in the cutting and threading of pipe. The gearing is entirely protected from dust, being inside of the cone, and six different speeds are obtained with but a three-step cone. The pump is out of the way of the operator and can be changed so as to flood either the dies or the knife or shut off entirely while the machine is in motion. The head is adjustable, quick opening and closing dies, and is so swiveled that it can be reversed and the pipe cut off close to the grippers. The vise is opened and closed while the machine is in motion by the movement of a dog either forward or backward. The sleeve operating the vise is adjustable, and can be adapted to the wear consequent upon long usage, and also to the variation in the size of pipe. By the use of the nipple grips pipe of all sizes within the range of the machine can be threaded. The nipple grips can be closed on the threaded ends of the pipe without injury to the thread, thus avoiding the necessity of screwing the nipple into the grips after they are closed. This is stated to be a feature peculiar to this machine.

The machine will make left hand threads as well as right. With this machine is furnished a threading gauge which works automatically and releases the chasers when the desired length of thread has been cut. With this arrangement any number of nipples can be turned out duplicates of each other as to length and length of thread. The chasers are five in number and are set by graduation to any size desired. They are released from threading while the machine is in motion, opened to permit the pipe to pass through to the cutting off knife and closed instantly and positively. They can be sharpened by grinding and are readily replaced by

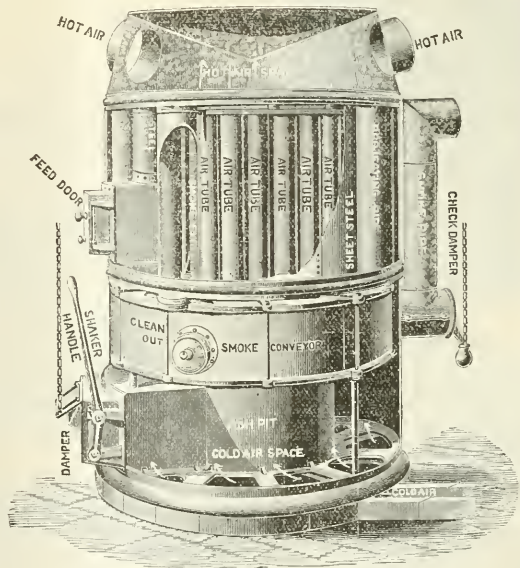
by the Merrell Mfg. Company of Toledo, Ohio, in two sizes, the first

Improved Hot Air Furnace.

A hot air furnace which embodies a number of interesting features of construction is just being introduced to the trade by S. J. Benedict of East Randolph, N. Y. Special attention is invited to the manner in which the products of combustion are taken from the fire pot and carried through long narrow slots into projecting pipes connecting with a low down radiator or smoke conveyer which extends entirely around the fire pot and which at the rear side communicates with the smoke pipe thimble and check damper. The arrangement of parts is such that all accumulations of dust or ashes can be readily removed by means of clean out holes and covers. Arranged about the fire pot is a series of vertical air flues consisting of the best quality lap welded tubes set in sockets at each end and thoroughly cemented. They are held rigid in proper position by means of rods or bolts which extend from top to bottom. In the accompanying illustration we show a view of this hot air furnace, with a portion of the side removed, so as to clearly indicate the internal arrangement. This furnace, we understand, has been thoroughly tested, the results showing it to be powerful and economical.

Dispatches from St. Petersburg assert that the Standard Oil Company and the Russian oil producers have definitely perfected an agreement whereby they will divide the markets of the world. The agreement, it is said, now only awaits the Russian Finance Minister's sanction before becoming operative.

Four new ironclads, of from 3400 to 4600 tons, are being built for the Dutch Navy. They are after the design of the



Improved Hot Air Furnace.

cutting from $\frac{1}{4}$ to 2 inch pipe inclusive, and the second from 1 to 4 inch pipe inclusive.

"Latona" and "Astrea" of the British Navy, carrying a crew of about 300 men.

PLUMBING and GAS FITTING.

Amendments to the Constitution.

Over the signatures of John Mitchell, president, and H. J. Pattison, secretary of the National Association of Master Plumbers the following amendments are being sent to the plumbers for consideration.

In accordance with the provisions of Article 15 of the constitution and Article 16 of the by-laws, prescribing that all amendments to the constitution and by-laws shall be in writing and in the hands of the secretary 30 days before the annual meeting, I have received the following, which I submit for the careful consideration of your association so that the delegates to the convention will know the wishes of their constituents:

Proposed amendments to Articles 2 and 3 of the by-laws, recommended by the National Executive Committee:

"The Executive Committee recommends to the thirteenth annual convention that Article 2 of the by-laws be amended as follows: 'The bond of the financial and recording secretary be increased to a sum not less than \$2000, as in the discretion of the Executive Committee may seem best, and that the surety be in a responsible guarantee company, and the fee for the same be paid out of the national treasury.'

"The Executive Committee recommends to the thirteenth annual convention that Article 3 of the by-laws be amended as follows: 'The bond of the treasurer be increased to a sum not less than \$5000, as in the discretion of the Executive Committee may seem best, and that the surety be in a responsible guarantee company, and the fee for the same be paid out of the national treasury.'

Proposed amendment to the constitution, providing for membership from the British Provinces, recommended by the Master Plumbers' Association of Boston and Vicinity:

"Resolved, That we urgently recommend to the favorable consideration of the members of the National Association of Master Plumbers that the scope of the organization be enlarged so that the master plumbers doing business in the British Provinces be admitted to membership."

Proposed amendment to Article 4 of the constitution, recommended by the New York State Association of Master Plumbers, through its president, Wm. J. McDermott:

"All local associations and individual members must be affiliated with their respective State associations, where same exist, in order to be recognized by the National Association."

Proposed amendment to the constitution to provide for a National Organizer, recommended by the Providence Master Plumbers' Association, through its president, Patrick Tierney:

"Resolved, That the constitution and by-laws of the National Association of Master Plumbers be and the same is hereby amended by the adoption and creation of an office to be known as the

National Organizer. Said office to be filled by a man appointed each year by the National Executive Committee at its first meeting, and to receive a salary not to exceed \$1500 per annum. It shall be the duty of the National Organizer to devote his whole time and attention to the advancement and organization of our trade through local and State associations in affiliation with the National Association. To adjust all differences of whatever nature referred to him by the executive head, acting at all times under and subject to the National Executive Committee. He shall make an annual report of his doings throughout the year to the next convention following his appointment. This resolution shall become a law and go into effect after its passage.

"Resolved, That the salary and travel expenses of the National Organizer, after being submitted to the Executive Committee and audited by the Auditing Committee, shall be paid from the general treasury, and that it shall be optional with the Executive Committee what charges shall be made to State and local associations (if any) for service rendered to them, by the National Organizer."

It may not be amiss to call attention to the fact that the last annual convention referred to a special committee on revision of constitution and by-laws the following, which will, no doubt, be reported to the convention:

"All local associations and individual members, in order to be recognized by the National Association, must be affiliated with their respective State associations, where such exist, by paying the per capita tax imposed by the State associations." This proposed amendment was referred to the committee on revision of constitution with instructions to revise Articles 4 and 5, affecting representation.

Amend Article 3 of the constitution by adding to it a paragraph to read as follows: 'The official year shall begin on the first day of June and end on the thirty first day of May. The president, financial and recording secretary and treasurer shall present reports at the opening of each annual convention of the association, showing their official transactions and the state of the association. The reports of the financial and recording secretary and treasurer shall be made up to and dated the day of the ending of the preceding association year.'

"That the special committee to be appointed on amendments to the constitution present amendments to provide for the appointment of a credential committee to sit at a time before the opening of the annual convention with a view of securing a report of the committee promptly upon the opening of the convention."

No amendments to the constitution providing for the appointment of a credential committee to sit before the convention meets, or a change in the fiscal year, would be necessary if local associations and individual members would pay their *par capita* tax when due, or before the convention meets; also, send in the credentials of their delegates. A

compliance with the above would enable the secretary to make out his report and be in a position to certify credentials and save the committee waiting for credentials to be passed upon by the secretary, which is impossible when members put off until the very last moment what could just as well be done two weeks before.

The Foreman Plumber.

BY SAMUEL A. HEINS, RONDOUT, N. Y.

I would like to say a few words through *The Metal Worker* on management of plumbing work and workmen. There is a great deal in managing workmen. In the first place the foreman should be a first-class mechanic and high up in sanitation. Some foremen are naturally fitted for this position. They have a genius for it; it comes to them by nature. With others it is difficult, their natural temperaments are against them; they are perhaps too self-conscious, a defect leading them, on the slightest occasion, to take offense; or they are liable to abstraction, which is another defect, preventing them from having their eyes open and taking a wide view. He must not be an absent-minded man. A foreman may possess more intellect, be a deeper thinker and have greater experience than his more successful brother, but lack the knack or tact of the other. While with some to manage men is a natural instinct, with others it is an art to be learned. Happily the art can be acquired, and in a less or greater degree all foremen should study to acquire it. Indeed, it is indispensable to success in the position he holds. The ability to manage men and the exercise of it smooths the thorny path of management. The wheels of the machinery run with less noise and friction; there are fewer back lashes to endanger the cogs and throw the pinions of life out of gear.

A judicious mixture of firmness, fairness and urbanity is needful for success in managing men. To be fair while you are firm secures confidence in your judgment and in your character for straightforwardness. One can be firm without bluster; urbanity is not a sign of weakness, and it sugars the pill of command. Our greatest generals have been men of quiet demeanor, not given to superciliousness. The order to do a thing should be given with a due sense and knowledge or belief that the person ordered is likely to perform the duty imposed upon him. An unreasonable order secures its own defeat, and it is more creditable to the person in command than to the servant.

A bond of sympathy should unite the manager and his workmen and it is the foreman who must weave it. Sympathy may well flow downward like water, but it also rises as water does when the tide is coming in. When the waters meet there is peace and a great stillness and a full sense of satisfaction. Where there is indifference the sympathetic waters recede and there is a barren strand littered with a noxious growth that poisons the air.

Local Associations.

PHILADELPHIA.

At a meeting of the Master Plumbers' Association of Philadelphia, Pa., held at the Builders' Exchange, the following persons were elected delegates and alternates to represent the association at the Thirteenth Annual Convention of the National Association of Master Plumbers, to be held on June 11, 12 and 13: Delegates, William McCosh, George F. Ueber, William H. Doyle, William S. Clark, William Harkness, Samuel W. Barnes, F. P. Brown, A. W. Hicks, John Gormley, J. S. Penock, John E. Eyanson; alternates, Robert Drummond, J. W. Smith, William Mentzinger, Walter Jones, A. G. Bond, Samuel Fleming, W. L. Owens.

BRIDGEPORT, CONN.

At a meeting of the Master Plumbers' Association of Bridgeport, Conn., held last week, the following delegates were elected to attend the National Convention of Plumbers in Philadelphia in June: H. B. Middlebrook, Thomas E. Logan, L. H. Mills, George E. Scofield; alternates, C. S. Eames, Theodore Fox.

PITTSBURGH

The Master Plumbers' Association, Pittsburgh, Pa., met last week in their rooms at the Builders' Exchange. Delegates to National Convention of Master Plumbers were elected as follows: C. H. Humbert, J. L. McShane, Joseph A. Weldon, J. J. Kennedy, T. B. Blythe, James Hay and R. J. Bradshaw; alternates, Frank McKnight, J. O. McGinness, Joseph Rice, S. W. Hare and George Addy. The matter of supervision of plumbing in Pittsburgh and Allegheny was taken up and a Committee on Legislation was created. It consists of James Hay, Joseph A. Weldon and J. L. McShane. This committee was instructed to draw up an ordinance for licensing all persons doing business as master plumbers, and the inspection of all work, old as well as new.

ALBANY.

The Master Plumbers' Association, Albany, N. Y., held a regular meeting last week in their new quarters, room 11, DeGraaf Building. In addition to the transaction of routine business the following members were chosen to represent the association at the thirteenth annual convention of the National Association of Master Plumbers, which meets at Philadelphia, June 11, 12 and 13: Delegates, Horace F. Westcott, Joseph A. Stahl, John E. Dugan, J. Edward Jones, Fred W. Ridgway; alternates, Timothy E. Kerwin, John J. Britt, Frank F. Schimpf, John H. Russell, Allen Gilmour.

CHICAGO.

The following delegates and members of the Chicago Master Plumbers' Association are to attend the convention of the National Association to be held at Philadelphia, June 11, 12 and 13: T. P. Culloton, J. H. Roche, J. B. Breen, J. J. Wade, J. DeVeney, M. J. Corboy, P. Sanders, C. C. Breyer, D. J. Rock, C. J. Herbert, J. G. Roland, M. L. Mandable, A. W. Murray, A. C. Hickey, C. J. Boyd, T. Conway, G. A. Larson, W. T. Geary, C. Byrnes, P. M. Murphy, Paul Redieske, Robert Griffith, Andrew Young. Alternates are T. C. Boyd, J. G. Webber, J. A. Voltz, D. M. Quay, J. L. Emblem, J. Degnan, R. B. Finn, J. J. Rourke, E. Baggot, J. Sanders, W. H. Cummins, D. Whiteford, J. J. Clark, J. H. Killian, R. Reich, J. J. Doyle.

NEW YORK CITY.

H. J. Pattison, vice president of the Master Plumbers' Association of New York City, gives us the following list of delegates who were elected last week to attend the National Convention of Plumbers to be held in Philadelphia in June: Gen. Geo. D. Scott, John Buras, John Mitchell, Henry J. Pattison, Henry G. Gabay, Frank Reynolds, J. S. Lindsay, Jos. W. O'Brien, Timothy Sullivan, Thomas J. Tuomey, E. J. Brady, James Muir, Cudwell Fraser, Thos. J. Cummins, Adam Huston, Wm. J. McDermott, M. J. McDermott, John Renehan, Michael Ryan, Charles Schloesser, John Regan, T. J. McCormack, William Young, Charles A. Walsh, James Fay, Isaac J. Brown, Jas. G. Collins, Wm. Kirchhof, Saml. Malcolm, John Yule, Thos. R. Delacey, Saml. Clark, A. H. Brown, John McCarron, Alexander Cameron, Thomas Martin, Wm. Montgomery and Alexander Bryant.

NEWARK N. J.

At the meeting last week the Master Plumbers' Association of Newark, N. J., elected the following delegates to the Philadelphia convention: Elias Berla, N. J. Steiner, C. Sullivan, Alex. Don, F. J. Sturn, Wm. Jacob, Wm. Zelfif, E. A. Bleything and Ira Budd.

TRAPS AND VENTS.

A NEW PLUMBING ESTABLISHMENT is to be opened in Stamford, Conn., by Jessup & Dunn.

THE FIRM of Smith & Son, plumbers, are erecting a three-story apartment building on the south side of Mahanogony street, Pottsville, Pa.

WM. STONEBACK and CHAS LEWIS have gone into the plumbing business at 31 North Seventh street, Allentown, Pa.

LUCKETT & FINDLAY, 98 Schermerhorn street, Brooklyn, make a fine line of gas, electric and combination fixtures. They also make a specialty of gold, silver and nickel plating.

AN ATTRACTION on the walls of the plumbing showroom of F. A. Hutchinson, 334 Myrtle avenue, Brooklyn, is a miniature piece of kitchen plumbing. Mounted on a panel 2 feet square is a copper boiler 1½ inches in diameter and 6 inches high. This is connected with a water back with ½-inch lead pipe. The service pipe branches immediately upon coming above what is supposed to be the floor. The main line runs up to an air chamber, a branch being taken from the side of this pipe below the air chamber to the boiler. The branch of the service pipe runs to the far side of the panel, and a branch is carried up to a small brass faucet over the sink, an air chamber being placed above the faucet. The supply pipe continues on and rises to supply the second floor, a stop cock being placed near the ceiling. From the top of the boiler the hot service runs to one side and takes a downward turn, with an air chamber above the turn. Near the floor a branch is taken to supply the fixtures on an upper floor, with a stop cock near the ceiling. The hot service continues by this branch to the brass faucet over the sink, with an air chamber above it. The pipe from the water back, after branching up and connecting with the bottom of the boiler, continues across the board and presumably connects with a sink waste. A stop cock, however, is placed in this pipe, and between the stop cock and the

boiler a pipe branches into it, which is the return circulation pipe from the fixtures on the upper floor. As a piece of plumber's handicraft this is a very creditable exhibit. The pipes all have neat bends, the joints being of good color and very perfectly shaped considering their small size.

THE W. C. VOSBURGH MFG. COMPANY, 269-281 State street, Brooklyn, have a large building devoted to the display of their line of gas, electric and combination fixtures. Different floors show different styles of goods, some being finished in Roman gold, old brass, silver plate and a steel finish. One room is devoted to a display of wrought iron chandeliers and library pendants. The company are about to bring out some new designs. One that is especially attractive is finished in Roman gold for electricity, the globe being a ball shaped opal instead of being transparent. One of their electric fixtures is a portable stand, which has flexible arms, so that the light attached may be shifted to several different positions within a given radius.

RONALDS & Co., at their Brooklyn factory corner of State street and Boerum place, have a large plant where they manufacture a varied line of copper and galvanized iron boilers. They also have their pipe presses, and here manufacture all sizes of lead, tin lined lead and block tin pipe. One portion of their buildings is devoted to the manufacture of bathtubs and another to the manufacture of lead traps. For the convenience of Brooklyn and Long Island plumbers a large space on one of the floors has been arranged as a show room for displaying their varied line of sanitary plumbing fixtures. Here are shown various styles of enameled cast iron bathtubs, with wood rim and with roll rim, also a variety of siphon jet and wash out water closets and lavatories.

HARRY SMITH, from Lewiston, Ill., has associated himself in the plumbing business with his brother Frank, at Oconto, Wis., the firm to be known as Smith Bros.

WARD S. GREGORY and RICHINGS J. SHAND have purchased the plumbing business of I. W. Springer & Co., on Water street, Rockford, Ill.

THE MASTER PLUMBERS of St. John, N. B., for some time have been discussing the advisability of organizing for the promotion of the general interests of the trade. With this in view several meetings were held and correspondence had with many plumbers. A general response was received and the association starts with a membership of 40 or more master plumbers. At the last meeting held considerable progress was made in forming a constitution, &c. The association is to be designated the "Master Plumbers' Association of the Maritime Provinces." Montreal has now a very large association, embracing Quebec and other cities, while Toronto is also in the field, making their presence felt by free lectures on sanitation, a spread of the knowledge of all matters appertaining to hygiene and plumbing, &c., while the matter of price-lists and indiscriminate sale of materials by dealers to inexperienced workmen and others is brought under consideration.

GILBERT B. Dow died at his home on Pearl street, Burlington, Vt., last week. He was born in Danville in 1825 and came to Burlington in 1844, engaging in the tinmith and plumbing business with Isaac Dow.

PRESIDENT McDONALD and SECRETARY NOBLE of the Master Plumbers' Association, Brooklyn, headed about 40 plumbers one morning last week who desired to protest against several sections of the new rules on plumbing and drainage just issued by the Board of Health. Commissioner Emery and Sanitary Engineer Johnson received the master plumbers. The principal objection of the master plumbers is to rule No. 40, which requires that they shall draw a map, showing where pipes of all kinds are to be located in new buildings. In the opinion of the president it will cost from 25 to 40 per cent. more and is almost an impossibility before the plumbing is put in. The Commissioner promised to consider their grievance.

THE ORGANIZATION of Montreal's plumbers has been followed by the establishment of plumbing classes at the Government trade schools, which are taught by a specially delegated master plumber and journeyman plumber.

CATHARINE McCUAIG has been registered proprietress of the plumbing business of Egan & Co., Montreal, Canada.

G. J. MORTON, plumber, Yarmouth, N. S., has admitted Harry A. Killam as a partner. The firm style now is G. J. Morton & Co.

BAILEY & STOWART of Middletown, Conn., plumbers, have dissolved partnership. J. W. Bailey will continue the business.

THE IMPORTANCE of Cincinnati, Ohio, as a center for the manufacture of plumbers' standard goods and specialties, is dilated upon at some length by a local paper.

THE BOARD OF EXAMINING AND SUPERVISING PLUMBERS, Binghamton, N. Y., held a meeting last week and C. H. Warner and John Lynch, Jr., were examined for master plumbers' certificates.

AN ENTERPRISE of which they are justly proud is reported by Thomas Kelly & Brothers, Chicago. They have recently made export shipments of some of their plumbing specialties to Berlin, Germany, and to Melbourne and Sydney, Australia. This speaks well for the sanitary furnishings manufactured in the United States. There is no good reason why a considerable trade should not be developed outside of the United States for plumbing goods. Some of the American houses already do a considerable trade in Cuba and in Mexico. Some drawbacks have been met in the attempt to introduce modern plumbing in Mexico owing to a want of a proper system of sewage. The City of Mexico, lying in a basin, has for years been troubled with the disposal of its sewage; but recently a large tunnel has been completed to carry the sewage through the hills intervening between the city and the water courses to a lower level. This should open up a field for an enterprising manufacturer of plumbing supplies and fixtures, as the city already has an abundant supply of excellent water.

THE FOLLOWING PLUMBING FIRMS have recently started business in Chicago: McIlvaine & Jordan, 704 1/2 Forty-third street; James C. Clinton, 1181 West Madison street; M. A. Berg, 364 West Taylor street; McGinty & Harper, 1050 Tripp street; John C. McCarthy, 4720 Wentworth avenue; George W. Palmer, 511 Wabash avenue; F. B. McCuren & Co., 3730 Cottage Grove avenue.

W. C. HAINES & BRO., are a new plumbing firm at 149 South Sixth street, Allentown, Pa., the members being W. C. and J. F. Haines.

A BROOKLYN PLUMBER has already been fined for violating the new regulations which went into effect May 15. He was doing work without having filed plans with the Health Department as required.

THE GUHEEN STRAUSS PLUMBING COMPANY of St. Louis have been incorporated, with a capital stock of \$5000. The incorporators are John Guheen, Gustave Strauss and W. D. Quigley.

THE CONTRACT has been closed between the East Moline Mfg. Company, Moline, Ill., and Lee J. Mittinger of Cleveland, Ohio, who represents a manufactory of brass goods, plumbers' supplies and stamped ware, of that city, for the transfer of their industry to Moline's new city of mills. It will employ over 100 men.

ROBT. CLARK, 100 Schermerhorn street, Brooklyn, is issuing to the trade a 16 page catalogue devoted to his lead, brass and nickel plated traps and plumbers' specialties. The first six pages are devoted to lead traps, showing bottle traps, bag traps, grease traps, running traps, round traps, Boston traps and the ordinary traps. These are shown with trap screws and with and without vent. The next six pages show nickel plated brass traps with waste pipe for lavatories, urinals and baths, the waste and vent pipes being either exposed or hidden. Another page shows a great variety of nickel plated and polished brass legs for open lavatories. A specialty is made of supplying flush pipes, tank and supply pipes and basin and bath pipes to order, and jobbing brass work and nickel plating. Another specialty of his business is lead burning, work being done at his shop, or expert lead burners will be sent where the work is to be done.

AT THE NEW YORK OFFICE. 92 Walker street, of R. M. Wilson, Rome, N. Y., a steady increase in demand is reported for their all copper sanitary bathtub. Some inquiries have been received for it from foreign countries, some sales having been effected in Italy and Japan.

G. F. HICKMOTT, representing the Birkery Mfg. Company, Hartford, Conn., is a visitor among the plumbing trade of New York City this week, and reports a general increase in trade. He has placed a number of good orders for the Birkery high pressure ball cock.

AT A MEETING of the Master Plumbers' Association of Hudson County, this week, a number of guests were entertained. The association is now thoroughly organized and has affiliated with the National Association of Master Plumbers. National President John Mitchell addressed the assembly, and among the other speakers were F. A. Smith, New London, Conn.; C. Sullivan, Alexander Don, Ira Budd and F. G. Sturn of Newark, N. J.

The climatic vicissitudes of Kansas were amply illustrated last week. In the middle of the week the inhabitants in the southwestern part of the State were sweltering under a temperature of 104°, while at the close they were experiencing heavy snow storms and keen northerly winds with a temperature close to the freezing point.

The Volume of Money.

It is an extraordinary thing, says *The Iron Age*, that there should be a tremendous agitation for a financial revolution resting entirely upon imaginary grounds. Desperate situations may justify desperate remedies, but they do not justify jumping from the frying pan into the fire, and our money situation is far from desperate. The disasters of 1893 and 1894 do not justify an agitation for the substitution of the silver standard in this country, which had been in progress for years before 1893, and is even growing more intense as the country emerges from two years of depression and heavy losses. For many years before 1893 the country was on the whole prosperous. It was not free from financial disturbances, and in some directions heavy losses were incurred, yet for a dozen or fifteen years business of every kind had expanded, wealth was accumulated, railroads kept in advance of population, and factories and mills multiplied on every hand. To revolutionize our financial system, under which till lately the country prospered, and under which it is giving evidence of recovery, and to revolutionize it in a direction condemned by reason and experience, is a course that cannot commend itself to sensible men, and least of all to men in business with large interests at stake.

What, then, is the excuse for the threatened revolution? It is an alleged contraction of the currency that has no existence. Neither the condition of the national treasury nor that of the banks indicates an insufficient volume of money. The volume of money in the country is much larger than it was 15 or 20 years ago. The much talked of circulation per capita has little significance, but the ratio of money to population has increased. The volume of gold money, and even its ratio to the population, has increased. The apprehensions of a gold famine are singularly out of season when the production of gold is greater than ever before and promises to remain for many years at about its present rate, when all commercial nations have increased their stocks of gold money, and when modern methods of banking and clearings and international exchanges have vastly economized the use of specie.

It is not even true that silver has been abandoned as a money, or that the monetary use of silver has been sustained in this country. The trade dollar, though not a legal tender, supplied employment for more than four times as much silver as had been used in making the legal tender dollar for eight years. The old dollar, whose further coinage was stopped in 1873, was revived with its legal tender qualities unimpaired in 1878, and for 15 years was coined in immense quantities, or the bullion was stored and represented in circulation by notes. The coinage of full legal tender silver money since 1873 has been vastly greater than it was previously.

The world at large has been increasing its silver coinage, and all the demonetization of silver that has occurred was the sale by Germany of a part of its silver coins. The amount sold was a little more than two years' purchases by our Government, under the act of 1890, and the sales were practically completed 16 years ago.

The grounds on which the country is asked to change its monetary system are irrelevant or imaginary, and the step itself would be worse than a leap in the dark; it would be a leap into obvious and unmistakable disaster.

ROOFING AND CORNICE.

Metal Tiles.

"Art in Metal Tile Roofing," which is the title of a pamphlet just issued by W. H. Mullins, Salem, Ohio, with eastern sales agency at 108 Chambers street, New York, is an exceptionally handsome publication. It is a pamphlet of the portfolio form—that is, the oblong sheets are held together at the back by a silk cord, and the binding is in parchment paper, the title on the front cover being raised and printed in green bronze. In the introductory note terra cotta roofing tile is alluded to, its merits are pointed out, but it is noted that in a climate of sudden changes this form of roofing has grave defects. The advantages of the sheet metal tiling are then compared and its advantages will be readily appreciated. The application of zinc to roofing purposes is likewise referred to in the introduction of the pamphlet, and readers are directed to the forms of zinc roofing that are illustrated. The entire introduction is compressed into a couple of pages, and following it immediately is the illustrated portion of the pamphlet. The first is a half tone full page engraving of Mr. Jefferson's residence on Buzzard's Bay, which is roofed with W. H. Mullins' patent copper tiles. Other handsome buildings and residences are similarly illustrated. The engravings that succeed are printed in brown ink, showing the detailed construction and the method of application of the various forms of tiles. These include Spanish tile, the Alcazar, the American, Saratoga, Scroll, Newport Shell, Columbian, Buzzard's Bay Shell and Atlantic Shell. Fancy ridging and hip moldings come next, with finials and terminals to match. The last three pages show Kinner's patent sheet metal roofing and stamped zinc roofing and stamped zinc roofing tiles. In addition to architects the roofing and cornice trades will value this publication.

The Berger Mfg. Company.

An attractive catalogue comes to hand from the Berger Mfg. Company, Canton, Ohio. It is a volume of over 100 pages, bound in a yellowish paper, with the name and address of the concern in raised red letters. The contents of the volume cover a most extensive assortment of roofing supplies, a great many new goods being included among the illustrations. This is the ninth annual catalogue and price-list issued by the Berger Mfg. Company, and in itself is a witness to the growth of this well-known concern. The first goods noted are the well known Berger slip joint eave troughs; Berger's combination roof gutter, followed by quarter circle, ogee and box gutters; Berger Imperial steel eave trough hanger, and the method of applying the adjustable hanger is shown. The Perfection wire hanger is another sort illustrated and Berger's patent adjustable irons are alluded to. Berger's corrugated expanding conductor pipe, round and square, occupies two pages; cast iron boots and sewer connections follow; then come 10-foot plain lock seam pipe, spiral lock seam

pipe, adjustable elbows, strainers, conductor fasteners, conductor books, rain water cut offs, speaking tubes, &c. Several pages in the middle of the book are given up to Berger's prepared American roofing plates for double seaming, put up in rolls 100 square feet to the roll. Allusion is made to the patent packages in which the rolls are sent, which insure the material being received in good condition. A number of ventilators are illustrated and the pages that follow are devoted to galvanized iron, ridging, cresting blocks and finials, of which a great variety are shown; galvanized iron crestings, malleable iron crestings and finials, &c. Cornices are illustrated in extensive variety, and then come hip caps and finials of galvanized iron, which occupy a number of pages. The second section of the pamphlet is entitled "Sheet Metal for Roofing, Siding and Ceiling," and gives practical information which will be appreciated by the trade. After the introduction come illustrations of various kinds of roofing, lock seam, standing seam and crimped edge. Corrugated sheets are noted at some length; cluster tiles or shingles, as well as the Cushman metallic shingle, are illustrated and described, and siding and ceiling follow, and then sheet metal ceilings, pressed brick, rock faced stone and other forms of rock faced materials adapted to fronts, cornices, pilasters, window caps, &c. A number of illustrations show the fronts of buildings made of this material. Various miscellaneous articles are alluded to at the close of the book, including iron doors and shutters, and at the very end is an alphabetical index.

FLASHINGS.

DISLEY & WEYAND, Waterbury, Conn., have another big contract for the Benedict & Burnham Mfg. Company for 3000 feet of copper skylights on the rolling mill, and also for a large number of galvanized iron ventilators.

THE PHILADELPHIA STEEL ROOFING COMPANY, Philadelphia, have placed their Boston agency in the hands of G. W. Van Horn & Son, 38 Kilby street, in that city.

D. B. HILTON, whose sheet metal working establishment on Clermont avenue, Brooklyn, was recently destroyed by fire, is now at 250 State street, where he has facilities for turning out cornices and skylights promptly. He contemplates making extensive alterations at his present location and will then have a fine shop with every convenience for his business.

THE COLUMBIA CORRUGATING MFG. COMPANY, Chicago, Ill., and Niles, Ohio, issue their 1895 illustrated catalogue and price-list. The first few pages give shipping directions and other information to buyers, and the catalogue proper opens with roofing tools, the Chicago patent roofing, both cap and folding cap. V-crimped roofing is similarly illustrated and described. Two tables of corrugated iron will be found very useful to the roofer. Rock faced

siding of various kinds is shown by fine engravings. Ridging strips, ridging caps, corrugated iron and roofing tools complete the first part of the pamphlet. Part second comprises conductor pipe, eave trough and galvanized sheet metal goods; also their patent lath and nested stove pipe, &c. Tables of sizes and prices accompany the illustrations. The manufacturers call the attention of users of these goods to the desirability of having them made of galvanized steel sheets. An alphabetical index, following a few pages for memoranda, completes the volume.

THE E. E. SOUTHER IRON COMPANY, St. Louis, Mo., issue their illustrated roofing catalogue for 1895, which is a pamphlet of 40 pages, bound in tinted paper and published in the interest of the roofing and cornice department of the company. An introductory page showing the method of laying corrugated iron is followed by illustrations and descriptive particulars of the various sorts of corrugated iron made by this concern. Curved corrugated iron for awning and other purposes is similarly illustrated. The application of corrugated iron to siding purposes is shown by the aid of cuts, and then various sorts of roofing are illustrated; also standing seam, roll and cap, V-crimped, &c.; sheet steel, pressed brick, beaded siding and ceiling and weather boarding. Then come flashings, combing strips and roll caps. Roofing sundries are noted, including paint and cement, roofing tools and galvanized iron, while the remainder of the catalogue is devoted to gutters, piping, cut offs, box gutters and metallic shingles. The company also issue a catalogue exclusively devoted to their gutter department.

T. W. ERWIN of Allegheny, Pa., has been awarded the contract for galvanized iron and skylights for the new plant of the Westinghouse Machine Company, at Brinton, Pa., on the main line of the Pennsylvania Railroad, about 11 miles from Pittsburgh.

THE FIRM of Ruth, Patterson & Ruth of Alliance, Ohio, have leased the glass factory buildings at Minerva, Ohio, and have reorganized into the American Mfg. Company, F. J. Ruth, president; C. C. Patterson, vice-president and treasurer; R. C. Ruth, secretary, and C. A. Smith, general manager. They will manufacture nested stove pipe, elbows and eave trough hangers, patents of Mr. Smith; also their Columbian combined snip and crimper, at Minerva, Ohio.

W. C. HOPSON & Co., Grand Rapids, Mich., manufacturers of and dealers in tinners' and roofers' supplies, are sending out to their friends in the trade a very attractive catalogue of the goods which they make and handle. Roll and cap roofing and folded standing seam roofing are first illustrated and prices given. Various forms of sheet metal for roofing and siding follow, including corrugated steel sheets. Pressed brick siding, rock faced siding and Eastlake shingles are illustrated and described. Ridge roll, ridge cap and

black and galvanized iron are noted. One page is devoted to their Superior New Method roofing plates, which is their own especial brand. Eave troughs, miters, eave trough hangers, gutters, valleys, conductor pipes, conductor hooks follow in the order named. Speaking tubes, gasoline soldering furnaces and ventilators are noted, one illustration showing Barker's chimney top and ventilator, a style of ventilator which is made in four sizes and from 6 to 10 inches. Galvanized iron skylights occupy a couple of pages. The remainder of the pamphlet is given up to steel ceilings, window caps, moldings, cornices, crestings, finials, blowers and exhaust fans.

THE CINCINNATI CORRUGATING COMPANY, Piqua, Ohio, issue an illustrated catalogue relating to their various Sheet Metal products. The front page of the catalogue is entitled "What We Make," and the list underneath includes Corrugated Roofing, Siding, Ceiling, Arches, Lathing, Shutters and Doors, V-Crimped Iron Roofing, Standing Seam Plain Roofing, Roll and Cap Steel Roofing, Outcast Elastic Joint Roofing, Metallic Weather Boards, Ridge Capping, Beaded Metallic Ceiling, Galvanized Iron and Roofing tin. They are prepared to furnish estimates and material for buildings, including Cornices, Gutters, Conductor Pipe, &c. An interesting feature of the catalogue is a map of the larger part of the United States, with Piqua in the center, showing its relationship with the other principal cities, and its accessibility from all parts of the country. The goods enumerated above are illustrated and described at some length in the pages that follow, and the tinner, in fact, will find the catalogue quite a handbook for much that comes in his line. Toward the close reference is made to Gutters, Ventilators, Conductor Pipe, &c., while at the very end is an index. The volume is bound in dark colored covers, with stamped gilt title.

AN ITEM in a local paper published in Leon, Iowa, states that Robert J. Collier has concluded to locate his cornice works in that city. His plant will be fully equipped to do all kinds of cornice work in iron or copper and general sheet metal work. The proprietor will also manufacture iron fronts, pediments, window caps, finials, skylights, ventilators, cresting, &c.

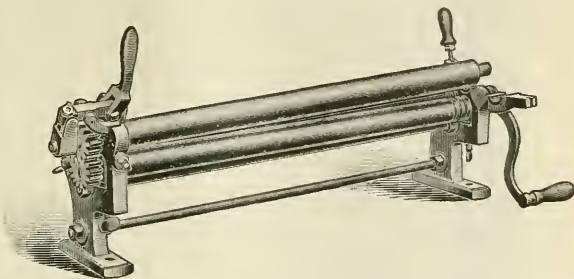
SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 14 for work including the roof of the United States Post Office Building at Richmond, Ky. Drawings and specifications may be obtained from the Supervising Architect, at Washington, or from the Superintendent, at Richmond.

The fire loss of the United States and Canada during April, as estimated from the daily records of the *Journal of Commerce*, amounted to \$11,018,150, as compared with \$14,239,300 in the previous month and \$11,540,000 in April, 1894.

The trustees of the Industrial School, South Third street, Brooklyn, have received a gift of \$25,000 from the widow of James W. Smith, the late president of the Consolidated Gas Company of that city. The money is to be devoted to erecting a memorial building connected with the industrial school.

Niagara Improved Slip Roll Former.

The Niagara Stamping & Tool Company of Buffalo, N. Y., have put upon the market an improved roll former, with upper roll arranged in convenient manner and, by quick acting mechanism, to allow of removing work of small diameter that has been formed around the upper roll. The left housing has a hinged cap for the journal of the upper roll, secured by a handle. In order to remove the work the handle is disengaged, and by an upward movement of the eccentric lever on top of the right housing one end of the upper roll is raised and held suspended. By releasing the eccentric lever the top roll is returned to its proper position and, after throwing back the cap of the journal and the handle the machine, is



Niagara Improved Slip Roll Former.

again ready for work. The lower front roll, as well as the back or forming roll, is adjustable by means of thumb screws.

Keen & Hagerty.

Keen & Hagerty, manufacturers of tinware, Baltimore, Md., are about to largely increase the size of their plant. Their factory is now located in the large building in the rear of the salesrooms on South Calvert street, but plans have been completed for the erection of a factory building on the lot bounded by Race, Ostend and Clement streets and the Locust Point branch of the Baltimore & Ohio Railroad. This lot is 800 feet long and 300 feet wide. It is proposed to locate the main factory on Race street. This building is to be 320 feet by 60, five stories high and built of hard brick. The engine house, from which the power for the machinery in the factory will be derived, will be a separate building, 35 x 48 feet, in the center of the lot. This will be equipped with a 100 horse-power engine and 120 horse power boiler. The retooling and galvanizing buildings, each 40 x 50 feet in size, will be adjacent to the engine house. The ceilings of the main factory building will be high, the first 10 feet, the second and third 14 feet and the fourth and fifth 12 feet each. Two elevators and two fire proof stairways will be placed in the building, and on the west side a fire escape will be provided from the roof to the ground. Each of the five floors will be fitted up with the latest and most approved machinery for the manufacture of different lines of goods, and all the goods which the firm handle that are made of tin will be manufactured under this roof. The buildings will all be well lighted, heated and ventilated, the architects having given particular attention to questions of sanitation.

The railroad company will run a side track along the main building, so as to afford facilities for receipt of the raw material and shipment of the manufactured product. The work of construction will begin as soon as the contracts are awarded. Bids are now being considered. The firm now employ about 400 hands, but expect, with the new plant, to give employment to several hundred more. They are desirous of having the new works in operation before next year.

A handsome publication is received by us from the Bigelow Company, New Haven, Mass., relating to their steam boilers, foundry cupolas, driers, coolers and digesters for packing houses, vulcanizers, tanks and plate iron work of every description, Evans & Burgess

water front forges, &c. The pamphlet is quite a sumptuous publication, measuring 9½ x 12 inches in size, and contains many handsome engravings of the goods alluded to. Tables of sizes and descriptions are given.

The G. S. Blodgett Company, Burlington, Vt., manufacturers of Patent Portable Baking Ovens, are making a special Oven for jappanning Bicycle frames and other parts, which, they state, is meeting with great favor among manufacturers of wheels and those dealers having repair shops. These Ovens are also extensively used for core baking, bluing, hardening rubber goods, bronzing and in the finishing of various Hardware specialties.

According to an extensive and careful investigation recently made by United States Consul H. J. Sommer, Jr., at Bombay, India, the results of which are contained in the latest volume of consular reports issued by the State Department, there are about 14,500,000 acres of cotton cultivation in India, the product of which is about 2,800,000 bales a year. Mr. Sommer reports that the cultivation continues, as for centuries past, with the most primitive methods, the industry being entirely in the hands of the natives. Fertilizers are not known, and the ginning is as primitive as the cultivation. The cost of gathering and cleaning the cotton ranges from \$2 per acre in the Madras Presidency to as high as \$8 in the Punjab, and the yield per acre from 37 to 54 pounds in Madras to 50 to 98 pounds in Bombay, 80 pounds in the Northwest Provinces and 96 pounds in the Punjab. The consul does not anticipate that the cotton growing industry of India will at any future time become a serious rival to that in this country.

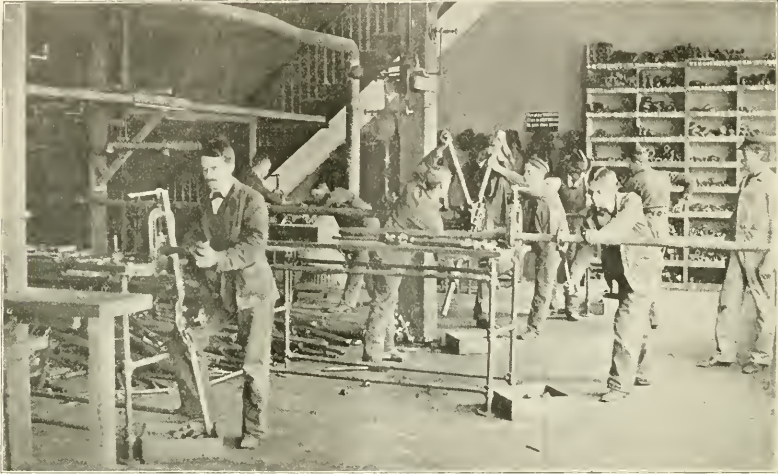
STEAM AND HOT WATER.

Steam Fitting Class of the New York Trade School.

The proficiency which has been obtained by the class in steam fitting at

by the committee to be of the highest possible grade, surpassing much work which is seen in buildings where a heating plant of the greatest efficiency is installed. This is remarkable when the

one just from school and one who had been in the pickle business. The class has been entirely in charge of Thomas E. McNeill, who, in his lectures, began with fundamental principles, and was



Steam Fitting Class of the New York Trade School.—Fig. 1.—A View in the Workshop.

the New York Trade School was a matter of surprise to the Trade School Committee from the Master Steam and Hot

previous occupation of the members of the class is considered. In the class there were two plumbers, three clerks,

careful to see that each one of his class thoroughly understood them. Mr. McNeill was educated as a mechanical

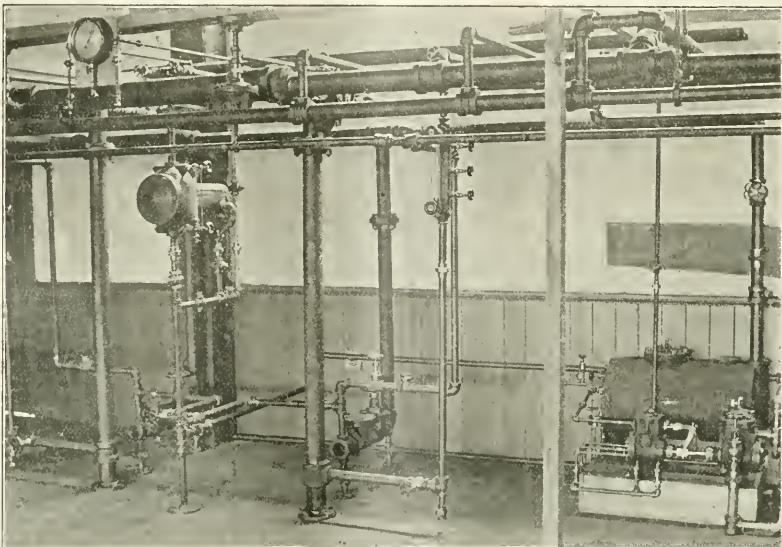


Fig. 2.—Some of the Work of the Pupils.

Water Fitters' Association, which is composed of John J. Smith, J. D. Clark, Charles J. Gillis, James Curran, Enoch Rutzler and S. J. Geoghegan. The workmanship of the pupils is said

two young men who had worked at heating and plumbing, one engineer, one gas fitter, one who had been in the leather business, one civil engineer, one who had worked at preserving fruit,

engineer, and for years was superintendent in the shops of Gillis & Geoghegan of New York, where he designed boilers of different capacity and laid out heating plants which

show his ability by their satisfactory operation.

The instruction in mechanical work was given by Chas. Coolidge, an expert pipe fitter, who has acted as foreman for engineer Wm. J. Baldwin in some of his most important contracts. Mr.

and return bend coils, which were made by the pupils. In addition to this, specially prepared plans were given to teach the method of piping where both high and low pressures of steam are used, and of getting the condensation back to the boiler by means of a re-

to the thoroughness with which Mr. McNeill laid out the course and instructed this class its usefulness far exceeded the expectations of those who suggested it as one of the trades to be taught at the New York Trade School.

In Fig. 1 we show a view of the workshop, with the young men engaged in various parts of the work taught at the school under the supervision of Mr. Coolidge. At the extreme right of the picture Mr. Coolidge is shown watching the work of his pupils. Examples of the work done by the pupils are shown in Fig. 2. The principal features of the work are a gravity system, an automatic receiver for the condensation and a pump for returning water to a boiler under pressure. The illustration also shows an automatic boiler feed. At the close of the course a rigid examination showed that each member of the class was thoroughly familiar with the principle involved in the operation of all that is shown in the picture, and appreciated the importance of avoiding any air trap and maintaining a proper pitch in the piping.

Our pictures are reproduced from photographs taken by one of the members of the class, Herbert L. Moore, Cambridge, Mass., who had previously graduated from the plumbing class of the school, and has been working at the trade regularly for five years.

Figs. 3 and 4 are reproductions of the plans of a school house with the heating system laid out, which were given to the pupils after they had sufficiently advanced in their course to erect the heating system in the workshop. These plans were exactly the same as would be furnished to a journeyman steam fitter working on a job. The young men took all the measurements, cut the pipe, made the header and return bend radiator coils, and erected the plant ready for operation. They worked in pairs, dividing the work between them, Mr. Coolidge taking no part in it except to pass the work when correctly done or to condemn it when defective on any cause. This work is now on inspection at the school, and it will readily be seen from its character that the graduates are well qualified to begin their career as steam fitters, under the instruction of a competent foreman, and are capable of excellent work.

NEITHER ordinary live steam nor "superheated" steam, says an English exchange, will heat a pipe thick and strong enough to convey it to a degree sufficient to produce a fire on wood, however dry. It will not even set charcoal aglow or in a blaze. But dry charcoal, when the heat is removed from it, being nearly pure carbon, will absorb oxygen from the air under favorable conditions so rapidly as to produce active combustion—that is, a glow or a blaze. The process of the origin of a fire from a steam pipe is: The heat from a steam pipe will in the course of time char or, as the chemists say, carbonize wood in contact or close to it. When this charring process extends to any depth in the wood it presents a surface full of fissures and cracks, thus exposing a large section to the action of the air. This process of charring drives the oxygen out of the charred portion and keeps it out while the heat is kept up. When the heat is removed the charcoal reabsorbs oxygen from the air, and if this action is rapid enough in a dry atmosphere combustion is the result. This explains why fires in steam plants and buildings heated by steam that

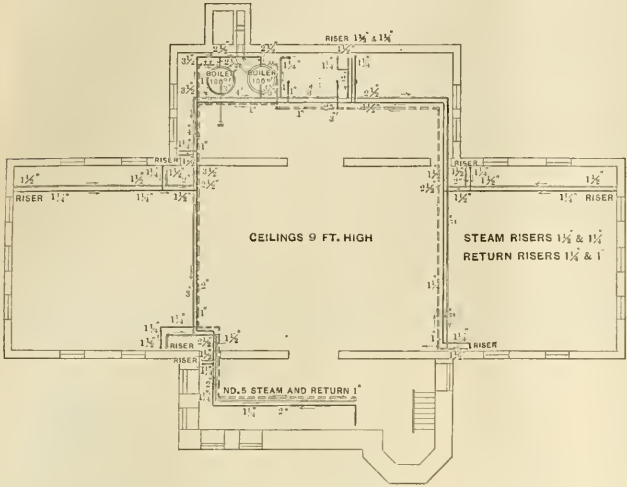


Fig. 3.—Basement of School House, with Boiler and Piping.

Coolidge impressed upon his pupils the necessity of working to an exact measure in all cases, and emphasized the fact that the proper pitch of pipes could only be determined by the spirit level. Mr. McNeill visited the class frequently, and when they had acquired sufficient

ceiver and a pump, and by a trap, hot well and pump, and for supplying the boiler with water by means of an automatic feed.

At the end of the term each member was examined individually, and it was highly gratifying that all of the class

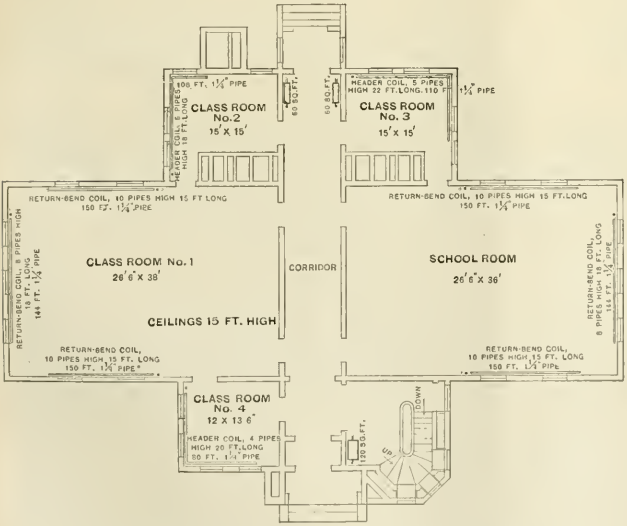


Fig. 4.—Plan of First and Second Floors, with Coils and Radiators.

skill in cutting and running pipe, he furnished them plans of buildings with the piping laid out just as it is received by a heating contractor. A boiler was located at a given point, and the mains and returns were run from it exactly according to the plans, connections being made with manifold coils, miter coils

who received certificates had become thoroughly acquainted with the methods mentioned. It is said to be the intention of the Trade School Committee to supply boilers for the class next year, so that after the boilers are piped they may be fired and the different systems may be seen in full operation. Owing

originate from steam pipes always occur after the pipes have cooled, generally during the night.

The Holly Gravity Return System for Utilizing Water of Condensation.

Through the courtesy of the *Electrical Engineer* we are enabled to present the following description of the system of returning water of condensation from engines and piping of steam plants devised by E. F. Holly of the Holly Steam Engineering Company of 344 Butler Exchange, Providence, R. I. The system has been installed in connection with a number of large steam plants, among others, quite recently, in the power house of the Broadway cable road in New York City, and further below we describe the equipment of the new Baltimore tunnel power house with the same system.

The Holly gravity return is a device employed to return water of condensation and entrainment back to the boiler

pipe, I, leads to a controlling valve, I', which is a small size of the reducing valve, Fig. 2, to be described presently. At the bottom is the return pipe H' leading to the boiler or boilers, if there are more than one. H² is a valve opening from H' into the sewer pipe. Between H' and the boiler there is a gate valve and a check valve in the order named.

The stand pipe separator is placed well above the water line of the boiler, the required distance varying under different conditions. It will be seen that if steam at practically boiler pressure is admitted to the separator and a means provided for raising the water of condensation from a receiver, a column of water will be formed which will rise to such a height above the water line in the boiler that its weight will be sufficient to open the check valve and the water will flow into the boiler. Returning now to the receiver, the operation of the device is as follows: All condensation is brought to the upper inlet of the suction T, which must be at a point below all pipes or separators to be drained. Steam, at as near boiler

ter from the steam as it is delivered from the receiver. The amount of steam flowing from the stand pipe is regulated by the reducing valve I' to a quantity just sufficient to raise the amount of condensation in each special case. This quantity of steam is so small as compared with the amount of water returned that the loss may be disregarded. If it is desired, however, this loss may be obviated by connecting the discharge from valve I' with a heater or radiator. The distance of the receiver below the boiler, or the linear distance of receiver and stand pipe separator from boiler, within limits which would be likely to occur in practice, does not interfere with the satisfactory working of the system in any way whatever.

One of the most interesting details of this system is the reducing valve referred to above and shown in section in Fig. 2, and known as the Holly Simplicity reducing valve. It consists of two chambers, A and B, screwed together as shown. A valve disk, C, is held in position by a guide and piston, F. Water collects in the space under F, and the piston with its surrounding

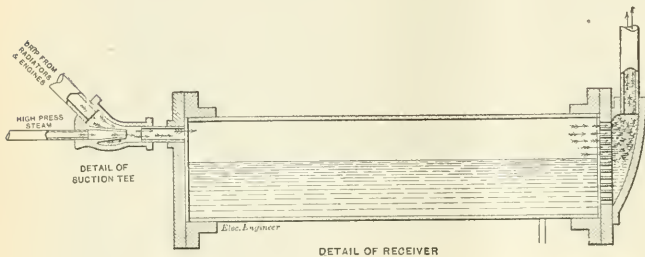


Fig. 1.—Suction Tee and Receiver.

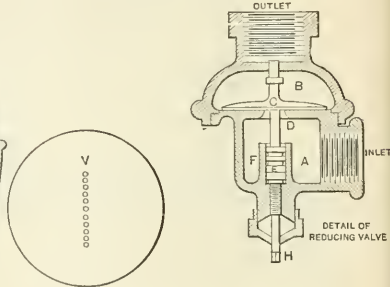


Fig. 2.—Holly Reducing Valve.

THE HOLLY GRAVITY RETURN SYSTEM FOR UTILIZING WATER OF CONDENSATION.

at the initial pressure, or less, and where the boiler or generator is located above or below the points or elevations at which the steam used is condensed, without pumps, traps or any similar device, and actually return the water by gravity. This is done by maintaining a column of water higher than the water line in the boiler, from which the condensation from all steam using devices will be continuously returned to the boiler. This is carried out in practice by means of a properly arranged receiver and stand pipe separator and suitable boiler connections, which will be readily understood from what follows.

The receiver, Fig. 1, is a cylindrical pipe provided with heads and a discharge neck shown at the right. The water of condensation enters through the suction T at the left hand, establishing a low water line, the position of which depends on the amount of work to be done in the receiver. The head at the right is provided in the center with a series of holes vertically arranged, their combined area being equal to that of the pipe G, which is the riser to the stand pipe separator, Fig. 4. The separator H is made either of 4 or 6 inch pipe, and is usually about 2 feet in length, and provided with caps at top and bottom. The riser G from the receiver enters the side, ending in an open T as shown. From the top a small

pressure as possible, is brought to the lower inlet. This steam acts as in an injector, to draw the water into the receiver, and also to maintain boiler pressure in the same. In starting the device the valve between return pipe H' and boiler is closed and valve H² opened. Steam at once flows from the receiver up the riser G to the separator and through the valve H² to the sewer, carrying the water of condensation with it in finely divided particles. This result is brought about by the peculiar arrangement of the holes in the head of the receiver. As soon as a steady flow of steam and water from receiver to stand pipe is obtained, the valve H² is closed and the valve between H' and boiler opened. Steam will continue to flow from the stand pipe through the small pipe I and reducing valve I', while the water which is brought up with the steam will fall to the bottom of the stand pipe, forming a column, which will soon reach a sufficient height above the water line in the boiler to overcome the resistance of check valve, plus the difference in pressure between stand pipe and boiler; and a return flow of water to the boiler is established which is continuous, requiring no further attention. This "working water line" in the stand pipe is somewhere in the vertical pipe H' and does not rise to the enlarged portion H, which is simply a separator to divide the particles of wa-

ter from the steam as it is delivered from the receiver. The amount of steam flowing from the stand pipe is regulated by the reducing valve I' to a quantity just sufficient to raise the amount of condensation in each special case. This quantity of steam is so small as compared with the amount of water returned that the loss may be disregarded. If it is desired, however, this loss may be obviated by connecting the discharge from valve I' with a heater or radiator. The distance of the receiver below the boiler, or the linear distance of receiver and stand pipe separator from boiler, within limits which would be likely to occur in practice, does not interfere with the satisfactory working of the system in any way whatever.

The flow of steam is allowed to continue until the pressure in the coils reaches the desired point, when the stem H is carefully lowered, letting the disk fall and thus reducing the flow of steam to a quantity just sufficient to maintain the pressure desired. The valve is now set, and all further regulation is automatic. The disk is balanced between the terminal pressure acting on its entire upper surface and the initial pressure acting on an area equal to that of the orifice D plus some reduced pressure between the disk and its seat acting on its lower surface. If

for any reason the pressure in chamber B should fall the disk would no longer be balanced and would rise, thus increasing the flow of steam and bringing the pressure up to the required point again. If, on the other hand, the pressure in B becomes too high the disk is forced down, the flow of steam diminished and the pressure reduced, and thus a constant ratio between the initial and terminal pressure is maintained at all times.

After the valve is once set for a certain ratio of reduction under the given conditions it requires no further regulation.

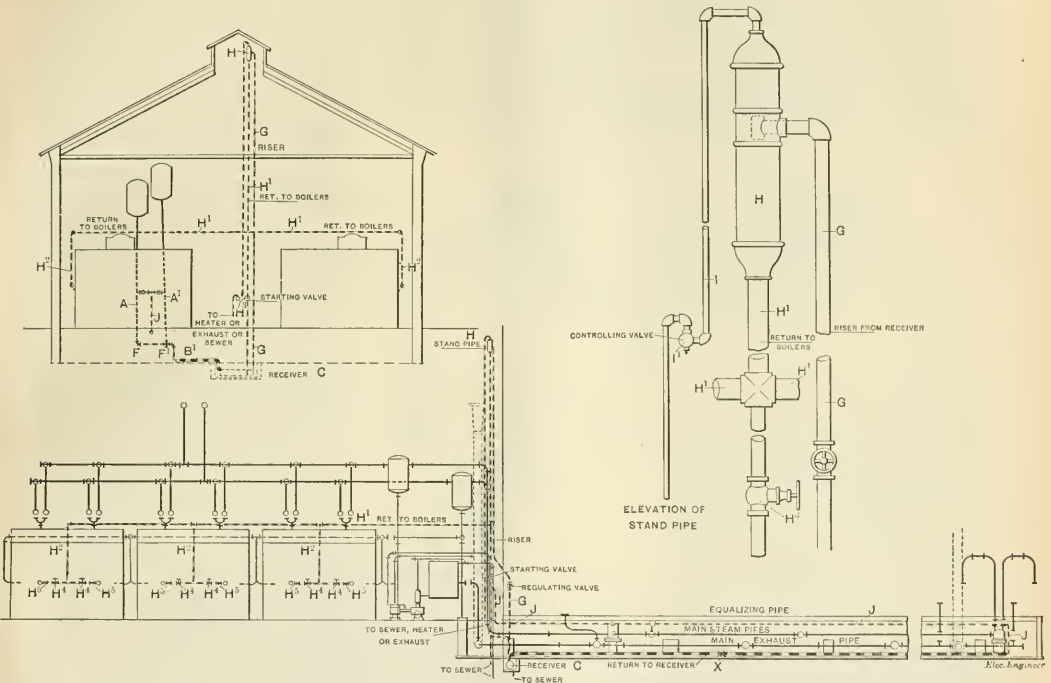
Fig. 3 shows an elevation of the system as it is being placed in the new

diameter. Included in this system are eight separators and two large expansion joints to be drained.

Beginning at the right, two lines of 2 inch pipe are carried for a distance of about 90 feet toward the receiver; to these return mains, four of the separators are joined by $1\frac{1}{2}$ inch pipe provided with suction T's. The object of the suction T in this connection is to insure a positive flow from the separator to return main, even though the pressure in the separator be slightly less than that in the main. For the remainder of the distance to the receiver the return is carried through a single line of pipe; the diameter being $2\frac{1}{2}$ inches to the point X and 3 inches

line in the boilers, where it terminates in an open T, inside the short 6 inch stand pipe separator H. At the top of the stand pipe separator is a $\frac{1}{2}$ -inch pipe, I, extending down to a point about 5 feet above the boiler room floor, and there provided with a $\frac{1}{2}$ inch Holly controlling valve for regulating the flow of steam from stand pipe, as previously described. As an indication of how little steam is necessary for this controlling feature it is only necessary to state that, if condensed, it would amount to about 600 pounds of water in 24 hours, as a maximum.

Assuming the evaporation of the boilers to be 8 pounds of water per pound of coal, we have 75 pounds of coal at,



Figs. 3 and 4.—Elevation of System in Baltimore Tunnel Power House and Detail of Stand Pipe.

tunnel power house of the Baltimore & Ohio Railroad Company in Baltimore. It is erected in combination with the duplex system of steam delivery which is to be used, and will continuously receive and deliver to the boilers all condensation and entrainment in the system between the large overhead separators at the left and the extreme ends of the high pressure mains A and A', which terminate in separators at the right, a distance of about 200 feet.

From the under side of the elbows on the vertical risers of steam mains A and A', $1\frac{1}{2}$ inch pipe is carried to the 3-inch return main in the engine room, to which it is connected by a suction T. This serves the double purpose of returning the condensation from the steam mains and furnishing steam at boiler pressure to the receiver. The receiver C is located, as shown, in a pit, walled with brick laid in cement; its dimensions are 6 feet long by 14 inches in

from there to the receiver. This return pipe is much larger than would be required to convey the water of condensation alone, but it is given this extra size to better utilize the slight grade obtainable and to insure a more perfect equalization of pressure throughout the entire system. The remaining separators are joined to the return main by $1\frac{1}{2}$ inch copper pipe, making long sweep bends to allow for expansion. Starting from the steam mains in the boiler room, a $2\frac{1}{2}$ -inch equalizing pipe, J, is run to the extreme end of the return main at the right, furnishing the latter with steam at practically boiler pressure.

The discharge pipe or riser G from the receiver is connected to the discharge neck at the end opposite to the return pipe B'; and rises above the engine room floor; then diagonally upward through the partition wall into the boiler room. It then ascends vertically to a point about 25 feet above the water

say, \$3 per ton, which equals 12 cents—the cost of returning more than 30 tons of water to the boilers. While the quantity is not great, it must be positive, continuous, and contain all the air entering the receiver. All pipes in the system including the stand pipe separator and receiver are to be covered with magnesia sectional covering and molded fittings.

While the Philadelphia Master Steam Fitters' Association is not included in the National Association, some of its members are independently connected with the larger organization.

AT THE COMMENCEMENT EXERCISES of the Technical School of Newark, N. J., a steam fitters' graduating certificate was awarded to John Cavanaugh and a plumbers' certificate to Edgar A. Metz.

Theoretical Velocity in Circulating Pipes—Hot Water Heating.

BY R. C. CARPENTER, ITHACA, N. Y.

The following discussion gives the velocity of circulation in hot water pipes from a purely theoretical standpoint. No allowance is made for friction or other losses.

Regarding the theory of motion in pipes for hot water heating, it may be said that this motion can be entirely explained by the effect of heat in expanding water, and thus causing the warmer liquid to ascend and the cooler liquid to descend. There is no doubt but that, in many cases, circulation is much accelerated by the formation of bubbles of steam in the heater, which lessen materially the weight of the heated column and cause it to ascend with great rapidity. This case is not, however, considered in this article.

There are two methods of considering the circulation, one of which neglects the mass of moving water and considers

moved, would be equal to the velocity which a body would acquire in falling through a distance of 1 inch. And similarly, in every case, when applied to a closed system, the velocity of water in the moving pipe would be the same as that of a body falling through a head equal to the distance between the heights of the heavier and lighter fluid in feet.

It is hardly necessary to point out that this proposition from a theoretical standpoint is erroneous, since it entirely neglects the consideration of the mass of water moved. It is a fact certainly known to all that the same force will not produce an equal velocity in bodies of different weights; thus, the force which will move 10 pounds at the rate of 5 feet per second will certainly not move 100 pounds at the same rate, and yet such is the supposition made in the formulae and rules of Mr. Hood. To be concise, he has held that the laws of statics are applicable to dynamics.

It is, I believe, quite easy to compute the exact rate of motion which bodies of different weights will pro-

duce, twice the force into the height. Or in the shape of a formula *

$$(2) v = \sqrt{\frac{2g(B-A)h}{B+A}}$$

h being the height fallen through.

In other words, if f equals the falling force, we have by proportion

$$f : g :: B - A : B + A$$

$$\text{from which } f = g \frac{B - A}{B + A}$$

which, substituted in place of g in Formula 1, gives the results as expressed in Formula 2.

In applying this to the case of hot water heating we have, instead of the descent and ascent of two solids of different weights, the descent and ascent of columns of water connected as shown in Fig. 3, the heated water rising in the branch A F and the cooler water descending in the branch B C. The force which produces the motion is the difference in weight of water in the two columns; the quantity moved is the sum of the weight of water in both columns. This is equal to the difference in weight of 1 cubic foot of the heated and cooled water divided by the sum, multiplied by the total height of water in the system, so that if W^1 represents the weight of 1 cubic foot in the column B C, and W represents the weight of 1 cubic foot in the column A F, and h represents the total height of the system, then the velocity of circulation will be in feet per second:

$$v = \sqrt{\frac{2gh(W^1 - W)}{(W^1 + W)}}$$

The formula, as given above, is somewhat more easy to calculate than that given by Hood and has the advantage of being more accurate, since the effect of the moving mass is considered. As an illustration, 1 cubic foot of water at 160° weighs 60.98 pounds, at 180° it weighs 60.55 pounds; the difference indicates the decrease in density and is 0.43 pound. The change of density is equal to 0.00702 per cent. expressed decimally. By the method first described the increased head causing motion, for a column 1 foot in height, would be 0.007 foot, and for 50 feet it would be 0.35 foot, which by the first theory would be the head producing the velocity, and hence the velocity would be equal to $8.03 \sqrt{0.35} = 4.77$, an amount which is one and three eighths that obtained by the more exact formula.

Computed by the exact formula already given, the velocity in feet per second for different heights and various differences of temperature will be as shown in the following table. The difference of temperature is estimated from 160°, although little sensible difference will be found for other temperatures.

Velocity in Feet Per Second in Hot Water Pipes.

Height in feet.	Free fall in Ft. per sec.	Difference of temperature.					
		1°	5°	10°	15°	20°	30°
1...	8.03	0.107	0.242	0.335	0.412	0.478	0.593
5...	17.9	0.233	0.541	0.750	0.922	1.09	1.33
10...	25.4	0.328	0.765	1.06	1.32	1.55	1.88
20...	35.9	0.463	1.085	1.5	1.85	2.19	2.66
30...	43.9	0.567	1.33	1.85	2.26	2.68	3.26
40...	50.7	0.656	1.53	2.12	2.61	3.08	3.76
50...	56.7	0.732	1.71	2.37	2.82	3.47	4.22
60...	62.1	0.802	1.88	2.59	3.20	3.79	4.62
70...	67.1	0.860	2.02	2.80	3.45	4.08	4.97
80...	71.8	0.925	2.16	3.0	3.69	4.37	5.32
90...	76.1	0.983	2.29	3.18	3.81	4.64	5.64
100...	80.3	1.037	2.42	3.35	4.13	4.78	5.93

* This is a well known fact stated in most works on mechanics.

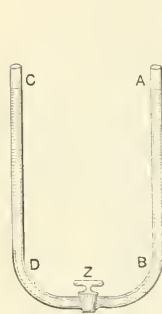


Fig. 1.

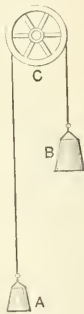


Fig. 2.

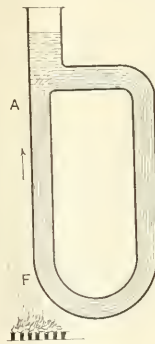


Fig. 3.

Theoretical Velocity in Circulating Pipes.—Hot Water Heating.

that the velocity is produced by the head of water, equal to the difference in height of two columns of equal weight. The other case considers the mass of water moved, and practically the two cases give different results. The following illustration will make the method of computation clear:

Suppose a U-shaped piece of piping, with a cock at the bottom, is arranged as in Fig. 1, and filled with liquids of different density on either side of the cock. If the liquids on either side are of equal weight the lighter liquid will be higher than the heavier one. Thus, supposing that water is in one branch and oil in the other, and that it requires a column of oil 10 inches in height to balance one of water 9 inches in height, the difference in height of two columns of equal weight would be 1 inch. If, instead of having the height in each column equal, suppose enough water be added to the heavier column so that the bulk in each column be made equal, and if then the cock be opened the heavier liquid will move downward and shove the lighter liquid upward with a velocity which, neglecting weight

duce, the methods of which will be as follows: A body falling freely in the air would move at a rate of motion which is proportional to the square root of the distance fallen, and is in every case equal to the square root of twice the force of gravity expressed in feet per second multiplied by the square root of the height, or in the shape of a formula:

$$(1) v = \sqrt{2gh} = 8.03 \sqrt{h}$$

$$\text{since } \sqrt{2g} = 8.03.$$

This formula neglects entirely the resistance of the air, but it is very nearly true for heavy bodies falling in the air.

When, however, we have to consider the motion of other bodies, some upward and altogether of a greater mass of material than that moving downward, the velocity becomes quite different. In this case the force which produces the acceleration is to the force of gravity in same proportion as the difference of mass is to the mass moved. Thus, for illustration, take the simple case of two bodies connected by a cord which passes over a frictionless pulley, C, in Fig. 2. The heavier body B in its descent draws up the lighter body A. In this case the moving force is to the force of gravity as the difference in the weights is to the sum of the weights, and the velocity is the square root of

* This illustration is taken from Hood's work on "Warming and Ventilation," and shows the method generally adopted for computing velocity of motion.

Heads Corresponding to Various Velocities. Free Fall.

Velocity. Ft. per sec.	Head in feet.	Velocity. Ft. per sec.	Head in feet.
0.1	0.000153	2.1	0 0 9
0.2	0.00062	2.2	0.074
0.3	0.00149	2.3	0.082
0.4	0.00248	2.4	0.089
0.5	0.00366	2.5	0.097
0.6	0.00553	2.6	0.105
0.7	0.00760	2.7	0.113
0.8	0.00910	2.8	0.122
0.9	0.01170	2.9	0.131
1.0	0.01650	3.0	0.139
1.1	0.0189	4	0.248
1.2	0.0223	5	0.389
1.3	0.0263	6	0.560
1.4	0.0303	7	0.760
1.5	0.0347	8	0.990
1.6	0.0396	9	1.250
1.7	0.0449	10	1.550
1.8	0.0502	15	2 26
1.9	0.0512	20	6 04
2.0	0.0518	25	9 70

New Surface Burning Florida Steam Boiler.

The American Boiler Company, 84 Lake street, Chicago, and 94 Centre street, New York, have just perfected and placed on the market a new and improved type of the surface burning Florida steam boiler, a general view of which is shown in Fig. 1. The special points to which the manufacturers call attention are as follows: 1. The heating surface has been greatly increased by deepening the corrugations in the sections. One of the features which have gained for the Florida its high reputation is its immense amount of heating surface, and in this respect a further improvement has thus been made. 2. A new and improved grate has been designed which will burn any kind of fuel, wood and anthracite or

soft coal burner by simply placing or removing the flue caps. For instance, by placing the caps on tops of flues a hard coal heater is obtained,

of soft coal be used, there is absolutely no danger of clogging. While this space in the old Florida was considered sufficiently large, the least possibility,

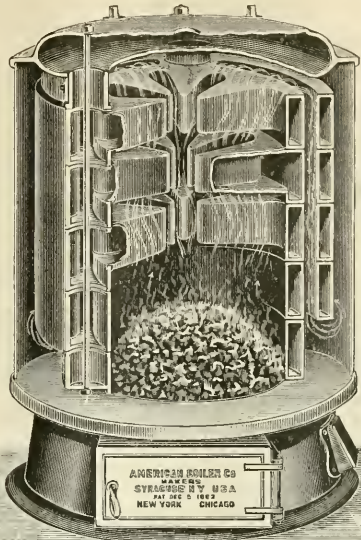


Fig. 2.—Broken View of Boiler.

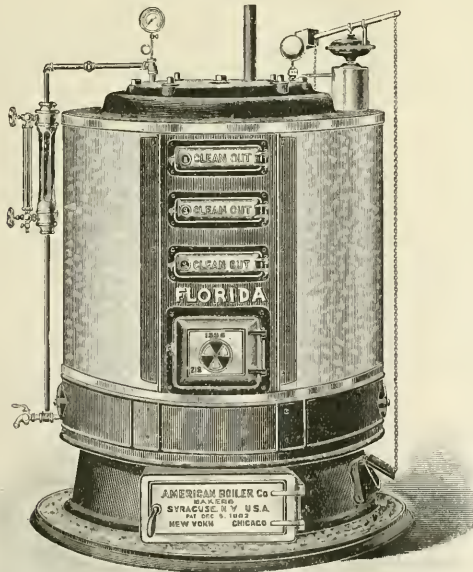
with indirect draft; removing the caps, a soft coal heater is provided, with direct draft. 4. In this latest pat-

if there were any, of the passage becoming obstructed is removed by the enlargement of this chamber. 5. Another improved feature is secured by increased corrugated surfaces. The projections, as shown in the cut, Fig. 2, extending so far over the fire, by arresting the products of combustion in their course to the top of the heater, take from them a greater amount of heat than was possible in the old Florida; consequently when the gases reach the dome they are almost devoid of heat, so that there is absolutely no danger of the dome cracking by becoming overheated. 6. In certain sections of the country it is found cheaper and more convenient to burn hard coal part of the year and soft coal in other seasons. The interchangeable flues in this heater permit it to be easily adapted to such changing circumstances. 7. The new construction is more easily accessible for cleaning, having more clean out doors.

The Steam Fitters' Convention.

The Executive Committee of the Master Steam and Hot Water Fitters' Association of the United States give the following information in reference to the seventh annual convention, which will be held in Philadelphia on June 13 to 15, at the Continental Hotel. The rates will be from \$3 50 per day up, on the American plan. There will be ample room for all, but those wishing special accommodations should apply to Wm. P. Thompson, chairman Arrangement Committee, 112 Broad street, Philadelphia, at once.

All parties wishing to attend the Philadelphia convention can purchase at any railroad coupon ticket office, tickets on the certificate plan and at one and one-third fare rate for the round



The Surface Burning Florida Steam Boiler.—Fig. 1.—General View of Boiler.

bituminous coal, including pea coal. 3. The flues are interchangeable, one of them being a return, so that the heater can be converted into a hard coal or a

tern of the surface burning Florida the space between the top section and the dome has been greatly increased, so that, no matter if the poorest quality

trip; that is, full fare must be paid going, and a certificate obtained from the selling ticket agent, which, upon being signed by the national secretary at the convention, will entitle the purchaser to a return ticket at one-third the going price.

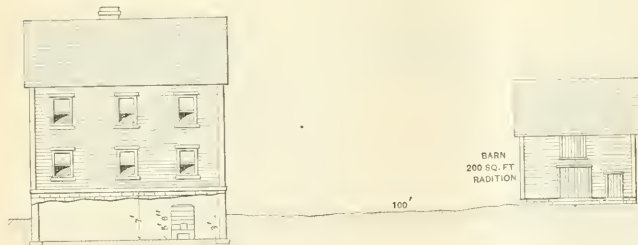
As there are several conventions to be held at Philadelphia at the same time, be sure and state, when you purchase your ticket, that you wish to attend the seventh annual convention of the Master Steam and Hot Water Fitters' Association at Philadelphia, June 10 to 15.

Delegates from all principal points west and northwest of Chicago to the convention of the Master Steam and Hot Water Fitters' Association and the National Association of Master Plumbers at Philadelphia in June, should be sure that their tickets to and from Chicago read via the Chicago, Milwaukee and St. Paul Railway, the only line running electric lighted, vestibuled trains between Omaha, Sioux City and Chicago, and between St. Paul, Minneapolis and Chicago, with compartment sleeping cars, standard sleeping cars, dining cars and most comfortable day coaches.

For further details apply to any coupon ticket agent, or address Geo. H. Heafford, general passenger agent, Chicago, Ill.

How Shall the Main be Run?

From S. F., *New Jersey*.—I submit to the readers of *The Metal Worker* a sketch, and will be glad to receive from



How Shall the Main be Run?

them some instruction as to what is the best method of running a hot water heating main from the boiler in the house to the stable shown. The cellar of the house in which the boiler sets is 7 feet deep, and the bottom of the cellar is 3 feet lower than the level of the stable, which is 100 feet distant. Two hundred square feet of radiation will be placed in the stable. The boiler stands 5½ feet high and the pipe must run at least 6 inches below the surface of the ground. I would like to know what would be the best size for the main in this case and the best way of protecting it from the cold in addition to the best means of getting the hot water over to the stable and a good circulation in this part of the system.

HEATING NOTES.

MANAGER MACKAY of the New York office of Hart & Crouse, 211 Water street, is fitting himself a very cosy office on the second floor of their building, which has become necessary through the increase in their steam and hot water business.

D. R. McCALLUM, manager of the New York house of the J. H. McLain Company, Canton, Ohio, who has had

an office at 69 Centre street, now occupies the entire showroom and is rearranging it, making some extensive improvements. An attraction to the steam fitting trade at the present time is the sample of the Cornell sectional steam boiler which has just been set up on the floor.

A NEW FIRM at Newport, R. I., are Lincoln Hammett & Co., 71 Mill street, who do steam and hot water heating, gas fitting, plumbing and electric lighting.

JOHN DAVIS, Second avenue and Eleventh street, Brooklyn, N. Y., the foundryman whose success in making heating boilers is well known, is enjoying a vacation among his old friends in England.

ARTHUR W. HILDERBRANT and OSCAR P. WARNER have formed a partnership and have embarked in the steam heating, plumbing and gas fitting business. The firm will be known as the American Heating Company, and will occupy the building on Church street, Hazleton, Pa. The company have the agency for the American boilers.

WALTER PENDLETON, manager of the New York office of the Niagara Radiator Company, Buffalo, N. Y., is showing a section of the new Niagara indirect radiator. The section exposes 16 square feet of heating surface. Their radiators will be used by the Hathaway Steam Heating Company, South Nor-

vester Company of Minneapolis, the final hearing in which was held last week before Judge Nelson, in the United States Circuit Court, at St. Paul, the decision was given that the Wood Company had the exclusive right to manufacture the well-known Appleby binder within the State of Minnesota. The case was referred to a master to ascertain the amount to be paid to the Wood Company for the violation of their rights by the Esterly Company and a permanent injunction was granted.

Central Stamping Company.

Central Stamping Company 23-25 Cliff street, New York, have for some time been engaged in a thorough overhauling of their manufacturing plants, warehouses and sample room. Extensive additions in the way of new buildings and machinery have been made at the different factories, dies examined and improved and a thorough system of betterments inaugurated. The effect of this renovation, we are told, will be seen by buyers from time to time in the enhanced appearance of many lines of goods with a view to making them even more attractive and merchantable than heretofore, at no increase in price as a rule.

In die work many plain surfaces have been embellished with raised or embossed figures, decorated utensils made in a variety of colors and finishes, so dealers may make a distinction in price on articles of uniform cost if desired, while inner surfaces on some goods which have been covered with solid color are now finished in more delicate and pleasing tints, with stripings of gold, &c., in some instances. The object of this wholesale renewal is to stimulate trade by producing goods of more tempting appearance for the same amount of money.

The president of the company, David James, has recently returned from a tour of some months in Europe, particularly through France and Austria, with a view to seeing what is being accomplished abroad in their lines of goods, and is incorporating many improvements in Sheet Metal Ware as a result of his observations. At both warehouses and factories they have installed independent electrical systems for furnishing power, light and heat. The sample room has been remodeled and lines of goods assembled in groups, which are designated by metal signs as follows: Farm, Dairy, Kitchen, House, Lawn, Garden, Stable, Insurance, &c., which are further subdivided under more specific names.

While the policy of the company is to ship direct from the different factories everything possible, they carry in stock in their New York warehouse an immense quantity of goods for the prompt execution of near by and hurry orders. There are eight floors in the New York building, including two basements. The top or sixth loft is reserved for such export business as cannot be attended to at the factories. The fifth loft contains largely specialties, the next below it seasonable goods, varying in character as the seasons change, while the third floor is stored with regular stock. The second floor contains the large display room, general and executive offices, city deliveries being made from the first or street floor. A number of new goods are being brought out, one of which is an improved Water Cooler Stand. Another specialty is a perforated Wrought Iron Garden Seat, to accommodate two or three people.

walk, Conn., in heating the new railroad station in that city.

FIRST VICE PRESIDENT JOHN B. DYER of the American Radiator Company, Chicago, is the guest of Treasurer Judson A. Goodrich at the New York office this week. They are displaying in their showroom a handsome photograph of the First Presbyterian Church in New York City, in which their radiators were used in the heating plant.

THOMAS W. WEATHERED sailed for England this week on the steamer "Berlin." The house of Thomas Weathered's Sons, 141 Centre street, New York, has been awarded the contract for the erection and heating of a large range of greenhouses and conservatories at Schenley Park, Pittsburgh, the amount of the contract being \$35,000.

GEORGE COPPINS, secretary of the Walworth Mfg. Company, Boston, Mass., has engaged passage on the steamer "Fulda" for a trip abroad.

In the case of the Walter A. Wood Harvester Company of St. Paul, Minn., against the Minneapolis Esterly Har-

TIN PLATES.

Tin Plate Manufacture on the European Continent.

At the request of a firm of consulting engineers, at Pittsburgh, the State Department have collected from Consular representatives of the United States some interesting information regarding the manufacture of tin plates and black sheets for tinning in Austria, Belgium, France, Germany, Great Britain and Russia, which are printed in the May issue of the "Consular Reports." The reports are not of very recent date, some being over ten months old, and they do not include any information about the new tin plate works which have been established in Italy and Spain. Nevertheless they embrace some information of interest, which has not hitherto appeared in the public prints, respecting the condition of the industry on the European Continent, and which deserves some measure of attention. We therefore print below an abstract of these reports, with excerpts therefrom, omitting, however, details regarding works in Great Britain, the general features of which are familiar to the majority of the readers of *The Metal Worker*:

Austria.

Consul General Max Judd, at Vienna, states that a fine quality of tin plate is manufactured in Austria for special purposes. The high cost of its manufacture, however, even with a heavy protective tariff, makes it difficult for the Austrian manufacturers to compete with England. Roughly estimated, the total cost of producing 100 kg. (220 pounds) of Austrian tin plate, exclusive of the cost of the iron, is given as follows:

Description.	Cost.
Rolling:	
150 kg. (330.69 pounds) coal.....	\$0.349
Fat.....	.067
Labor.....	.414
Total.....	\$0.86

Cleaning and heating:

Coal, sulphuric acid, fat and percentage of cost on use of boxes, &c.....	\$0.556
Labor.....	.146
Total.....	\$0.702

Tinning:

Fat.....	\$0.244
Coal.....	.045
Sulphuric acid, oil, &c.....	.069
Wooden box.....	.308
Tin.....	2.436
Total.....	\$3.102
Total for producing 100 kg. (220.46 pounds) of first, second and third class tin, exclusive of ore.....	\$4.664

Tin plate is not much used at present in Austria for roofing purposes, as zinc, on account of its greater durability, is preferred. It is used most extensively in packing food, matches, &c., and for the various articles made by the tinner. Mr. Judd states that the tin plate produced in the Austrian factories is considered by competent judges to be superior to the English, and even to the German. It is the extreme cheapness of the English tin plate that makes its export from England to Austria possible. No list of the Austrian works is given.

Belgium.

Consul Nicholas Smith, at Liège, reports that neither tin plate nor sheets of

iron or steel for tinning are now produced in Belgium. Though once a flourishing trade, it has been completely crushed by the new and larger enterprises. His remarks, in passing, that when its ruin was first threatened an effort was made by the Government to stay it by laying a heavy impost upon the foreign product. But as the decadence continued the duty was repealed and the industry left to die. In his judgment tin plate is being rapidly supplanted in the mechanic arts by other and better materials. If the Liège market may be accepted as a standard, very few uses now remain to it in Belgium. It is no longer employed for roofing and gutting; enameled iron has superseded it in the manufacture of household and kitchen utensils. Grocers' and confectioners' boxes are all of wood or paper. Canning is practically unknown; it is even said that fruit is sold to England in crates and bought back in porcelain. Vegetables from France alone come in tin, and even for this purpose it is giving place to glass. Belgium ceased to manufacture tin plate in 1875, when the English manufacturers enlarged their scale of production and the Belgian makers failed to keep abreast of their advance in methods.

France.

According to Consul-General Samuel E. Morse, at Paris, several important iron and steel works in France are engaged in the manufacture of tin plate, and the industry is a considerable one. Both iron and steel sheets are used. The following list of these works is appended to this report:

District of Paris.—Société Anonyme des Forges et Fonderies, Montataire, Department of the Oise.

Eastern District.—De Pruines, at Sémouse, near Plombières les-Bains, Department of the Vosges; Société Anonyme des Forges de Franche-Comté, Beaumont, Department of Doubs; Chavane Frères, Baing., Department of Vosges; the Estate of R. de Bruyer, Aillevillers, Department of the Haute-Saône.

Western District.—Forges d'Hanneboub, Department of Morbihan; Langlois, Léon et Cie., Base Indre, Loire Inférieure.

Central District.—Campoinnet et Cie., Guégon, Department of Saône et Loire.

Bohemia.

Consul J. C. Monaghan, at Chemnitz, reports that at Zuckmantel, a suburb of Teplitz, in Bohemia, is a works where tin plate is manufactured by what is described as a new, successful, simple and very profitable method. It is situated near a coal mine, the iron and steel bars and pig tin being brought to the works, the former from neighboring furnaces and the latter from abroad, although tin has been mined for ages in the hills of Bohemia. Machinery is made to do the work of men at every possible point in the process of rolling, dipping, handling and cleaning the plates, two men only being stationed at each tinning pot. The works run day and night, employing about

700 hands. They turned out in 1892, during every 24 hours, about 66,138 pounds of sheet tin. On the large rolls, where the ingot goes in the first time, after being taken from the furnace, are 14 men, four of whom get from \$1.60 to \$2 a day; others get \$1 and \$1.20. The average laborer receives 60 cents a day; day laborers (common laborers), 40 cents a day; mechanics, 75 cents to \$1; boys and girls, from 25 to 40 cents a day. Most of the help are paid according to what they make. The cost of living in Bohemia is very small, the necessities of life costing from one-half to one-quarter of what they do in the United States. The tin plate is put to all kinds of purposes from the smallest articles of domestic use to heavy roofing. A considerable quantity of the tin plate made at Teplitz is taken by the Austrian Government.

The size of the tinned sheets varies and depends upon distance of transportation, uses, &c. The prices are based on weight, with the kilogram (2.2 pounds) as unit. Of course, thickness counts as a factor; 1 sq. m. of iron tin plate 1 mm. thick weighs 7.5 kg. (16.5 pounds); 2 mm. thick, 15 kg. (33 pounds); 1 sq. m. of steel tin plate 1 mm. thick weighs 7.9 kg. (17.4 pounds); 2 mm. thick, 15.8 kg. (36.8 pounds). The average prices here, for 100 kg. (220 pounds) of iron tin plate, 22 marks (\$5.23); 100 kg. of steel tin plate, 38 marks (\$9). Thus a plate 2 mm. (0.078 inch) thick, 1 m. (39.37 inches) wide, and 2 m. (78.74 inches) long costs 6.95 marks (\$1.65.) The prices, however, fluctuate with the prices of the raw materials, and these, of course, depend on the supply and demand; oftentimes, on speculation.

Germany.

Consul-General Frank H. Mason, at Frankfort, gives the following details respecting the tin plate industry of Germany and the process of manufacture followed in that country: Tin plate (*Weissblech*) is manufactured in Germany by six firms, five of which are united in a trust or syndicate called the *Weissblech Verkaufs-Comptoir*, whose central office is at Cologne. The approximate annual product of these six manufacturers is as follows, the figures given being in boxes containing an average of 60 kg. (132 pounds). The five firms first named in the subjoined list belong to the syndicate above mentioned; the sixth has thus far operated independently.

	Boxes.
Rasselstolner Eisenwerks-Gesellschaft, near Neuwid.	180,000
Westfälischer Union, Nachroth, Westphalia.	120,000
Hütener Gewerkschaft, at Hütten, Westphalia.	90,000
Gewerkschaft Grillo, Funke & Co., at Schalke.	60,000
Les Petits-Fils de F. de Wendel, Haguenau, Lorraine.	40,000
Dillinger Hüttenwerke, Dillingen on the Saar.	60,000
Total.....	550,000

This is equal to 3300 metric tons, and is nearly all consumed in Germany, besides which Germany imports largely from England, the imports of tin plate in 1892 having aggregated 4378.6 metric tons, and those of 1893, 4614.8

tons. British tin is used mostly at and near the seaports of Germany, while the domestic product is consumed in the interior. The entire process of manufacturing and coating tin plate is performed in Germany by the makers above named. Nearly all the steel plate used for this purpose is made and coated in the same establishments. The tin used is, first, the 150 tons which are produced annually at Altenberg, in the Saxon Erzgebirge, and the remainder is imported mainly from Banca and Australia. Official statistics show that of the 10,537.6 tons of block tin imported into Germany during 1893, 5506 tons came from Great Britain and the British colonies, 3097 tons from Holland, 1194 tons from the Dutch East Indies, and the remainder from Belgium and Austria-Hungary.

All sheets used for tin plate in Germany are of mild steel (*Fluss-eisen*). The bars are rolled from four to six times, having first been heated to a dark cherry red. After this rolling they are called plates (*Blätter*) and are then reheated to a dark red heat and again rolled from five to eight times, the sheet being doubled each time when it has passed the rolls. The package of sheets thus rolled together is then sheared to the required size and the sheets pulled apart. They are then ready for cleaning and coating.

At the rolling mills two daily shifts of ten hours each are employed. The cleaning and coating departments work only one daily shift of ten hours. A plant which turns out during the year, say, 120,000 boxes, or 8000 tons, of tin plate employs about 480 men, boys and girls, whose average wages are 3.25 marks (78 cents) per shift. These operatives are distributed as follows: Rolling and shears, five men at \$1.90, \$1.54, \$1.19 and 47 cents; acid dipping, two men at 83 cents; annealing, three men at 83 cents, three boys at 47 cents and three girls at 34.7 cents; dressing (cold rolling), five boys and five girls at 34 cents; coating, six men, viz., two at \$1.42, two at \$1.19 and two at 71 cents; packing, four men at \$1.19 per shift.

After leaving the rolling mill the sheets are passed through two baths. The acid used in both baths is mostly crude hydrochloric (muriatic) acid, which is purchased at a strength of 20 to 22 B $\acute{e}$, and is diluted for the first bath with 4 or 5 parts of water, and for the second bath with 2 parts water to 1 part of acid. Sulphuric acid is considerably more costly in Germany than muriatic acid, and is for that reason rarely used for cleaning tin plate. All acids used for this purpose must be quite free from arsenic or the process is spoiled. After passing through the first bath the sheets are washed clean with water and are then dried and annealed. When entirely cool they are passed from twice to four times through the rolls (cold rolled) and again annealed. They are then passed through the second bath, washed clean with water and are ready for coating with tin. For each set of plates two kettles or cauldrons of tin are employed. The coating process varies slightly at the different works, but these differences are only in minor details and are too technical to be described here. To those who are interested in the subject all the different methods of coating employed in Germany will be found fully described in "Die Technik der Weissblech-Fabrikation," by Wilhelm Stercker, published in Verhandlungen des Vereins zur Beförderung des Gewerbelebens, Berlin, 1887, Vols. VI and

VII. In all cases the tin bath is protected from oxidation by a film of palm oil floating on its surface. After coating the sheets are brushed and cleaned from adhering oil by rubbing with wheat bran and are then ready for assortment and packing. The cleaning process is performed entirely by hand, no machinery of any kind being used.

Russia.

In a report from Consul General Charles Jones, at St. Petersburg, that official states there is no sheet iron or steel manufactured in his consular district, and no sheets for the purposes of the tin plate industry are manufactured in the Russian Empire. Black sheets of that description are imported from Wales, and they are simply coated with tin in the Russian factories. Imported black sheets are subject to a duty of 64 copecks per pood (about 1 cent per pound in gold); tin plates pay a duty of 1 rubbie 70 copecks per pood (2½ cents per pound in gold). In the Ural Mountains, on the eastern border of European Russia, roofing sheets are largely manufactured of the regulation size of 1 x 2 arshines (2½ x 4½ feet). They are of excellent quality and cheap, and in former times were largely exported, but now the export of Russian sheet iron is very small, because good sheet iron is made in many other countries. An attempt is being made to introduce the manufacture of sheet iron for the purpose of the tin plate industry in St. Petersburg, and a factory has been in process of construction on Vassili Ostrov for the last two years, but the impression prevails that the experiment is destined to prove a failure.

Consul Rawicz, at Warsaw, reports that tin plates are made in Poland, but only of black sheets imported from England.

New York Branch of Merchant & Co., Incorporated.

Since the well known Philadelphia tin plate and metal house of Merchant & Co., incorporated, first established an agency in New York City they have been obliged to change its location no less than four times in order to meet the exigencies of their growing business. Quite recently they removed their quarters from 247 Pearl street to a commodious building at 245-247 Water street, formerly devoted to the same line of business and far more favorably situated in every way. Here the firm have established themselves in a five-story building, with 35 feet frontage and depth of 75 feet, where ample space is afforded for carrying a very large stock of goods. Advantages in the way of increased floor space and storage are accompanied by a considerable improvement in the matter of light and ventilation over the quarters previously occupied. On the ground floor, at the entrance, is located the shipping office and city department, the remainder of the space being devoted to the storage of heavy stock, such as galvanized and sheet iron, tin plate, solder, sheet copper, &c. The second floor in front has been handsomely fitted up with a suite of offices, including two general business offices and the private office of the manager. Here Charles H. Bolles, Jr., the courteous representative of Merchant & Co., is comfortably installed, and here he takes pleasure in receiving his friends in the trade. A long distance telephone, close to his desk, places him in

instant communication with headquarters in Philadelphia. Back of the offices, on the second floor, are stored a lighter class of goods, such as zinc, ventilators, &c., while the third floor is devoted to corrugated leader, wire, tinners' supplies and such articles. Surplus stocks are carried in the firm's Brooklyn warehouse at 584-586 Flushing avenue. Mr. Bolles states that he has already been able to note a marked increase in the amount of business secured since the transfer to their present quarters, which are situated in the very center of the metal quarter. The firm are carrying in their New York store a very large stock of their "Tandem" continuous roofing tin, for which there is said to be an ever increasing demand in this vicinity. Merchant's "Star" ventilators are also attracting much custom, and in the new store an ample supply of these articles are always kept on hand for prompt supply.

SCRAP.

THE IRONDALE STEEL & IRON COMPANY, Middletown, Ind., have made a slight increase in wages of the employees in their tin plate works.

WELSH TIN PLATE MAKERS appear to be buoying themselves up with the hope that the American manufacturers will not be able to permanently hold the trade they are now holding. They take the position that the initial orders have been taken by American works at a loss in order to create a connection, but that when orders are repeated the American makers will be obliged to raise prices in order to make a profit. How far this expectation will be realized remains to be seen. It is, however, a matter of considerable doubt whether any of the tin plate manufacturers in this country are acting on this principle. So far as we have been able to discover they are proceeding on the sensible principle of contenting themselves with a moderate profit. Few, if any, we believe, are at the present time selling their plates at a loss. The hope on the part of the Welsh makers that they will ultimately be enabled to gain any large proportion of their lost American trade on these grounds is likely to prove a delusive one. American plates are gradually but surely establishing their reputation in this market, and a number of the largest consumers of bright plates have openly declared their preference for the American product as being more reliable and, on the whole, of a better quality than the imported article.

THE NEW ROLLING MILLS which the Stickney Iron Company are building at Canton, Baltimore, Md., will have an estimated annual capacity of 3400 tons of black plates suitable for tinning. A tinning department is also being added, and the new plant is expected to be in operation by about July 1.

THE Iron and Steel Trades Journal states that the situation in the Welsh tin plate trade is a very perplexing one. Of the few makers who are working the majority find their powers curtailed by their men being under the Board of Control and bound to work only two out of three mills. This, it is claimed, absolutely precludes any maker from showing a profit at present, as his standing charges on the idle part of his works consume any profit he might make on the active portion.

WARREN WEBSTER & Co., Camden, N. J., have recently supplied a 3000

horse-power Webster Vacuum feed water heater and purifier to the Pennsylvania Tin Plate Company, New Kensington, Pa.

ACCORDING to the returns of the British Board of Trade for April, exports of tin and terne plates from Great Britain to the United States during that month were 15,946 tons, as compared with 13,210 tons in the corresponding month of 1894 and 18,743 tons in March, 1895. The total shipments to the United States for the first four months of the year have aggregated 76,516 tons. The American shipments have been declining month by month during the present year, and it is thought probable that the gradual decrease will continue during the coming months as the production of American plates increases.

THE WORKS of the Landore Tin Plate Company, Swansea, Wales, recommenced operations last week at a reduction of 12½ per cent. in the wages of the workmen and on the understanding that a month's notice would be given by either party to alter the terms of the agreement.

THE CHEAPNESS of tin plate and the facility with which it can be molded by machinery to any required shape is leading to its substitution in England for tin foil and other papers for wrapping purposes. "Vulcan," in the London *Ironmonger* chronicles the fact that quite recently English tobacco manufacturers have taken to discarding the lead and silver paper wrappers for small square tin boxes, in which the better kinds of packed tobacco are now sold. The cases, which are neatly made and embellished with a device in enamel, hold one ounce of tobacco each. An extensive plant and machinery for the manufacture of these cases has lately been erected near Birmingham, and the trade is said to be a growing one. The wholesale price of the 1-ounce tobacco boxes is said to be no more than \$1.10 per gross.

THE PLANT of the Struthers Iron & Steel Company, manufacturers of sheet iron and sheet steel, Struthers, Ohio, is expected to be in operation not later than June 15 next. It will be remembered that the above firm purchased some time ago the plant of Summers Brothers at Struthers, Ohio, and since acquiring possession have equipped the plant with the most improved machinery to be had, and will soon be prepared to furnish the trade iron or steel sheets of any quality or size. J. Warner, who for ten years was connected with the Falcon Iron & Nail Company, Niles, Ohio, is general manager and treasurer of the Struthers Iron & Steel Company.

IN THE COURSE of CONVERSATION a member of one of the largest oil importing houses in the United States observed recently that the American tin plate makers are hardly alive as yet to the desirability of using only the very best African palm oil in the manufacture of tin plates, although this fact has long been appreciated by makers in Wales. The latter he said, habitually use only the highest quality of cleaned and clarified palm oil in their tinning pots. The dirt and grit which are always present in the cheaper grades of palm oil are an unmitigated nuisance in the pots, involving constant attention to the skimming of the surface in order to keep it clean, and thereby wasting time and material, as a small proportion of oil is unavoidably brought away at each skimming. Moreover, the dirt is paid

for in the weight of the cask, and this item represents several pounds weight in casks of cheap palm oil. There is, too, always the danger of scratching the surface of the finished plates when gritty oil is used. When American manufacturers have the full light of knowledge and experience in this matter, our authority remarked, there will be no more demand for the cheap brands of palm oil for tinning purposes in this country.

CABLE ADVICES from England state that several Welsh tin plate works are restarting this week, owing to the workmen accepting reduced wages.

ACTING SECRETARY WIKE has made an important decision regarding the allowance of drawback on pig tin. In a letter to the Collector of Customs at San Francisco he says: "The Department is in receipt of your letter in relation to the application of the Alaska Packers' Association for an allowance of drawback on imported pig tin entering with domestic lead into solder used in the manufacture of tin cans exported with salmon. As it appears that the quantity of tin contained in the solder so used can be ascertained by an examination of the finished cans, you are hereby authorized to allow on the exportation of the cans a drawback equal in amount to the duty paid on the pig tin used in soldering the same, less the legal deduction of 1 per centum. The quantity of the imported pig tin so used may be determined by allowing ½ pound thereof for each case containing not less than 48 cans."

A RECENT letter from San Francisco states that the prospects of the tin plate market on the Pacific Coast are very good. The outlook for the canning of fruits and vegetables and of salmon becomes better every day, and prices keep up. The outlook is for an unusually heavy consumption this year, and as the market is very lightly stocked supplies for a long time to come will have to be large. Imports by rail continue, but have ceased to be of any special magnitude. Imports to date by sea have been 151,479 boxes. The "Alamedas" has come to hand with 1084 ingots of Australian tin, making a total of 9051 ingots since January 1. There has been no special change in this market of late. Since the beginning of the year it has fluctuated between 14½ cents and 15 cents.

Ventilation and Heating.

The following paper was read by Dr. Mark T. Clay, Union City, Mich., before the Sanitary Convention held in that city:

Ventilation involves two ideas; one, the supply of fresh air, and the other the removal of the vitiated air. Accordingly two openings should be considered. If an open fire place exist in the room, it, in connection with some opening to admit fresh air, would in all probability be satisfactory. Fresh air may also be introduced into dwellings by mechanical means—namely, by the so-called impulsors. The pure air is derived somewhere near the house and conveyed to the ventilator, which diffuses it through canals into every corner of a room. The impure air escapes through fissures in windows, doors, walls and ceilings. And if, in connection, a corresponding system of suction canals be arranged, the effect is the greater, and the division of air is under

complete control. The dust may be carried away with vitiated air. The circulation of air is effected by the fresh air entering at the top of the room and sinking downward, while the impure air, together with any falling dust, is sucked out at the bottom of the room. More thought is given to the subject of ventilation during the fall and early winter than any other time of the year. In the summer time windows and doors are wide open and the air circulates freely through the houses, stores, offices and all other inclosures, but with the first coming of cold weather down go the windows and slam go the doors, and the people immediately begin to suffer from drowsiness, nausea, headache, faintness, and all the other ills that attend the breathing of impure air. This brief season between summer and winter is the most trying period of the whole year, and is much worse than the corresponding time in the spring, for by the latter time people have become used to breathing foul air, and then artificial heat is continued till summer heat arrives, and so makes it possible to open windows in the intermediate time of cool weather.

But in the fall all this is different, for heat from furnaces, stoves and boilers is economized till the last moment, and in the meantime every cool air entrance is kept sealed lest some one suffer from a chilly draft.

When winter arrives the conditions become changed. The furnaces and indirect radiators deliver large volumes of fresh air into the rooms, and where the direct heating systems are employed the plentiful supply of heat makes window and door ventilation possible without discomfort. The breath of life in a physical sense is pure air, and of this there must be plenty. Home ought to furnish the restorative agencies, for the place of toll or business cannot always be of a health giving character. Toll, of whatever character, is exhaustive of life's forces. But in our homes, where a part of the day and all the night is spent, very little attention is paid to their construction in regard to ventilation. Doors and windows, with an occasional transom, have been deemed sufficient. That fresh air in plenty may be had requires a more careful arrangement. The old fashioned house, with its open fire place in every room, was a more practicable provision. And this reference suggests the only specific recommendation we care to make—namely, every dwelling of more than one story in height ought to have a ventilating shaft or chimney, into a separate compartment of which every room should have an opening. The construction and connections of such ventilating shafts need not increase the cost very much, if the plan were properly made; and in cases of sickness this additional facility in the sick room would often make the difference between continued illness and recovery.

The New York *Journal of Commerce* announces that a number of export houses interested in the South American trade are developing a new scheme for the organization of an intercontinental express company which will facilitate the export of merchandise to Central and South American countries.

A dispatch from Mexico announces that the Tehuantepec Railroad is now in operation, and that there is considerable passenger traffic on it.

STOVE TRADE NOTES.

Furnace and Range Association.

About two years ago the members of the furnace and range trade of New York City and vicinity quietly organized under the somewhat imposing title of the "Furnace and Range Dealers' and Manufacturers' Association of the City of New York and Vicinity," for the excellent purpose of fostering good will among their members and drawing them into closer friendly relations. With a view to making the organization more effective in case joint action should be required in the matter of labor or other possible complications, the association affiliated with the Builders' League of New York, but the consolidation was only incidental to the more important purpose of establishing and maintaining pleasant social relations between its members. The association held its annual meeting last Wednesday afternoon and, having discussed matters of mutual interest, elected for the ensuing year the following officers:

President, D. S. Ramsay.

Vice-President, C. B. Boynton.

Secretary and Treasurer, W. M. Seymour.

These officers, together with C. O. Lyon, George G. Brooks and D. U. Cory, constitute the Executive Committee.

After the meeting the members adjourned to Mouquin's restaurant on Fulton street, where they sat down to enjoy an elaborate and delicious dinner, the following members taking part in the feast and in the oratory that began with the coffee: D. S. Ramsay of Ely & Ramsay, Charles C. Lincoln of J. D. & C. C. Lincoln, James G. Lyon, Chas. B. Boynton, E. E. Dickinson and J. Wodell of the Boynton Furnace Company, Charles O. Lyon and Edward Benedict of the Thatcher Furnace Company, H. E. Jones of Jones & Kirtland, William M. Seymour of Graft & Co., Henry Morford and Thomas P. Rushby of the J. L. Mott Iron Works, E. C. Moffatt of the Simonds Mfg. Company, D. U. Cory of Uzal Cory & Co. and George G. Brooks of Bramhall, Deane & Co. While this does not include the entire membership, which embraces several other prominent firms in the range and furnace business, it constituted a happy family of kindred spirits, who, in the pleasant intercourse of the evening, gave no evidence of being business rivals. The dinner was a perfect success, and when President Ramsay spoke to a cigar accompaniment

he addressed a well fed and genial audience, ready to applaud his witty observations and heartily assent to his deprecation of whatever promoted suicidal competition. All of the members present were introduced in turn, and each gave expression to his belief in the benefits to accrue from the cultivation of a friendly spirit in their business relations. The speeches were not of the extemporaneous, carefully memorized sort, for none knew beforehand that he was to be called upon, and the general good fellowship which characterized them was, therefore, a true expression of the prevailing feeling.

There is every reason to believe that this organization will continue to grow in efficiency and strength, for the idea underlying it is a most excellent one, and it is to be hoped that its influence will spread throughout the State and lead to the formation of kindred associations in many places.

The Ohio Stove Trade.

Advices from stove manufacturers in this section continue to be encouraging. A number of founders have taken special care to send us information taken from their books which shows the volume of business thus far transacted during the year 1895 to be greater by 25 to 32 per cent. than last year, and in some instances this is especially gratifying, as the business transacted in 1894 was the best ever experienced. Those who have anticipated a falling off in business during April have been surprised by increasing orders.

Most of the foundries near Cincinnati are running full in every department, with the outlook favorable for continued activity. Some manufacturers even write that they have need to increase present capacity, but that they cannot do so now without interfering with present business. Information from some sections of Indiana, however, indicates that trade is falling off some there. Business during the first three months was heavy; in fact, including April, greater than any preceding year, but the past month has shown a quieter tendency, as is to be expected at this season.

The restlessness in the labor field seems to be the only disturbing feature at the moment, and even that is likely to be settled by arbitration, although the tendency seems to be toward an increase in the cost of production, as iron is advancing, with the prospect of a further rise in both the North and South, but the hardening tendency has caused a lull in the market for pig iron.

Money is in more ample supply and

rates of interest have been less firm during the past week.

New England Stove Manufacturers' Association.

The New England Stove Manufacturers' Association held its annual meeting and banquet at the American House, Boston, Thursday evening, May 16. The dinner was preceded by a business meeting at which the following officers were elected:

President, A. W. Walker.

Vice president, John R. Prescott.

Secretary and treasurer, P. W. Elliott.

Executive Committee:

W. A. Spicer.

W. E. Walker.

G. L. Walker.

Price Committee:

J. R. Prescott.

A. N. Parlin.

C. F. Baker.

W. P. Hood.

R. E. Warner.

At 7 o'clock the company, members and guests, adjourned to the banquet hall, where covers were laid for 80. The table was handsomely set and decorated and furnished with a dinner of exceptional excellence. The menu, which was full of word play on the names and characteristics of the various goods manufactured in New England, was the source of much amusement for all present.

Following are the names of those who were present:

H. A. Tinkham, Geo. W. Elliott, L. B. West, Geo. C. Blandin, Geo. L. Walker, C. F. Baker, B. M. Shaw, E. W. Fiske, Frank E. Woodward, W. McK. Barbour, Richard E. Warner, John R. Prescott, P. W. Elliott, Albert N. Parlin, W. E. Walker, William A. Spicer, George W. Walker, George E. Wilbur, George W. Barrows, Arthur W. Walker, Daniel D. Dunkler, F. P. Leonard, F. K. Chase, Wallace C. Leonard.

At the close of the dinner President Wm. E. Walker called the company to order and introduced the speakers with grace and felicity. The after-dinner speeches were delightfully informal; in fact, the whole affair was a sort of family gathering in good old New England style, and every one appeared to enjoy it. The toast list was as follows:

1. Modern cooking as exemplified in the Culinet range. Geo. W. Walker of Walker & Pratt Mfg. Company, Boston.

2. On the recent introduction of ranges in Europe, especially at Monte

Carlo. Albert N. Parlin of Magee Furnace Company, Boston.

3. How I Got There at the World's Fair, or How the Model Line Came to be Awarded a First-Prize Medal at Chicago. Wm. A. Spicer of Spicer Stove Company, Providence, R. I.

4. What I Know About Pattern Making. Geo. E. Wilbur of Weir Stove Company, Taunton, Mass.

5. My Experience in the State Board of Arbitration. R. E. Warner of White, Warner & Co., Taunton, Mass.

At the close of the regular toast list the president-elect, A. W. Walker, was escorted to the chair and made a neat speech of acceptance and compliment to the retiring president. Mr. Walker in turn presented H. A. Tinkham and Geo. W. Elliott, who responded briefly and pleasantly.

Although this was the third annual meeting of the N. E. S. M. A. it was their first annual banquet. Much credit is due P. W. Elliott for his efforts to make the affair a success, in which he was ably assisted by the committee. The occasion was greatly enjoyed by all those present and marks a new departure in the New England trade which it is planned to keep up by frequent meetings, succeeded by dinners at which the speech making talent developed at this banquet may be further utilized and that which it is suspected is lying dormant brought out for the enjoyment and profit of the trade.

Death of Ex-Treasurer Peckham of the Stove Association.

The stove trade of the country will learn with deep regret of the sudden death of S. Townsend Peckham, which occurred at midnight on May 11. The funeral services were held at 5 o'clock of Tuesday, May 14, at his late residence, 137 West Seventy-sixth street, New York City, and the interment was at Forest Hill Cemetery, Utica, N. Y. Mr. Peckham was for a number of years treasurer of the National Association of Stove Manufacturers, retiring from the office in May, 1892.

HUGH R. CHAMBERS, manager of the Troy branch of the Phillips & Clark Stove Company, Geneva, N. Y., has recently been elected Grand Master of the State Orange Lodge. Mr. Chambers was employed by the Fuller & Warren Company from 1880 until 1883, when he entered the service of the Phillips & Clark Stove Company, going with the concern to Geneva in 1884. The next year he filled the office of traveling salesman, and since 1890 he has been the successful manager of the Troy branch of the company. In the year 1880 he was initiated in the Royal Orange Institution in Troy and made Master of the Abraham Lincoln Loyal Orange Lodge in 1884. Later he was Master of Mount Horeb District, L. O. L., composed of the officers of all the lodges in Troy and vicinity. He was elected First Deputy Grand Master of New York State in Syracuse in 1894 and was unanimously chosen this year for State Grand Master.

Quakertown Stove Works.

We have received from Roberts, Winner & Co., proprietors of the Quakertown Stove Works, Quakertown, Pa., a copy of the illustrated catalogue and price-list which they have issued, showing their lines of stoves, ranges, heaters and Alaska steel plate furnaces. It is a neat publication of 86 pages, bound in colored paper covers, with embossed title in old gold. The opening pages give the names of those composing the company, the address of the Philadelphia sales agency, an alphabetical index, as well as a brief announcement to the trade in which attention is called to a number of additions which have been made to the company's line of ranges and heating stoves. Our Leader range occupies the place of honor and is shown in a variety of styles and sizes. It embodies the modern features of utility and convenience and is shown in a very neat and attractive dress. The Beechwood range, for coal or wood, made in four sizes; the Paragon, a six-hole range, attractively treated, and the Triumph, a five-hole range, are some of the other goods to which the attention of the trade is invited. There is also the Electric, the Lstimer, the Artisan, the Queen Beechwood, the Belmont, the Tip Top, the Neptune, the Daisy and Lucerne ranges and the Invincible cook for coal or wood, all made in several styles and sizes. The latter portion of the catalogue is devoted to heaters, the Royal Princess, made in two sizes, being the first considered. Following this is the Menlo, double heater; the Glendon, a medium priced parlor stove; the Laurel, a direct draft heater; the Jeanette, Gypsy, Aldine, Red Hot, Fire King and St. Jo. The Alaska steel plate furnace occupies several pages, while others are devoted to classification of castings for repairs, prices of fire brick and skeleton cuts of the various stove plates, numbered for the purpose of facilitating the ordering of repairs.

The Specialty Furnace.

The latest candidate for prominence in the furnace line is the Specialty furnace, just brought out by the Thomas, Roberts, Stevenson Company, Philadelphia, Pa. It is said to embody some rather striking features in its make up, both externally and internally. The front is square in shape, massive, and unique in appearance. The upper portion of the front projects somewhat, so as to allow of plenty of room when admittance to the inner casing is required through the door arranged for that purpose. The door is in the form of an eye and is nickel plated. The eye is surrounded by a representation of flames, which work into the general design of the front. On each side of the fire door are flambeaux, and the details of the whole design seem to give the impression that the furnace and its scientific principles are "under the eye." The front fastenings are so designed as to make the task of mounting easy for one man only. The fire door is large and the nickeled name plate covers the greater portion of its surface. The coal chute is wide and large. Immediately under the fire door is what is described as an "oxygen conduit," which admits air to a belt or ring formed by the lower edge of the crab section and the upper edge of the fire pot. The air taken into this ring finds an outlet into the combustion chamber by the way of small slots in the edges

of the two sections and consequently increases the efficiency of the heater. The air belt also is said to cool the fire pot and relieve it from all tendency to crack. The grate is known as the Ransom Duplex, and is made to slide into position on ledges, so that it may be removed at any time. The grate and shaking apparatus are all held in place by a single pin and washer, so that instant removal of the whole may be effected without first removing bolts. There is an independent slip feeder neck front which bolts to the crab, and as the fire pot and crab expand the front also expands and slides up on the main front, leaving the main front in its original condition and preventing a disturbance of the construction of the furnace and consequent leakage. The front is said to be more durable on account of this device. A new form of check valve controls the draft. A damper on the inside of the valve is so connected with the valve itself that when the latter is opened the damper rises, resulting in a double check to the draft and preventing an inrush of air from the cellar, carrying the gases back to the combustion chamber. It also, it is claimed, renders the opening of the fire door entirely unnecessary, except for stoking. The vapor pan is galvanized. The castings are heavy and the drum is constructed of 16-gauge sheet iron or steel. The ash pit is in one piece, thus obviating the annoyance caused by ashes sifting out into the hot air chamber and their dust passing upward through the registers. The furnace is designed especially to burn pea coal, and is claimed to possess advantages in point of economy which should insure large sales. The makers state that combustion is so perfect and the furnace is under such complete control that 4 tons of pea coal will heat the Philadelphia seven or eight room house that ordinarily requires 6 tons of stove coal.

ODD PLATES.

THE FERROSTEEL COMPANY of Cleveland and Chagrin Falls, Ohio, are meeting with a good demand for their specialties and are said to be so crowded with orders that the works are running considerable overtime. The force is about to be augmented by the addition of 20 hands, which will raise the number of employees to 55.

THE PENINSULAR STOVE COMPANY of Detroit, Chicago and Buffalo are furnishing their customers with all kinds of stationery in the way of letter heads, bill heads, &c., having a very neat and attractive lithographed heading embodying the name and address of the customer and a *fac-simile* of the trade-mark of the company. This stationery is supplied at low prices, which enables the dealer to have a finely lithographed letter head for about the same price he would pay for a cheaply printed one. A circular which the company have issued shows the various sizes of stationery which can be supplied and the prices in lots of 500 and 1000.

THE WROUGHT IRON RANGE COMPANY of St. Louis, Mo., have rented a store at Freehold, N. J., and will introduce the Home Comfort range in that vicinity.

THE ROYAL RANGE is a new candidate for public favor on the sample floor of Hart & Crouse, 211 Water street, New York. Manager Mackay has rearranged his sample floor, grouping the various samples of radiators attractively in the center and setting the Royal

range on a platform on one side. The range is made both single and double oven, the single oven range being made to heat an upper room and with the oven at either the right or left of the fire. Both ranges are furnished with a duplex grate and sifter grate and a large ash pan. They are of the sheet flue character, and are provided with the Reed damper. Both styles are furnished with a low hot closet and a nickel plated kicker, which is placed beside the nickel plated oven shelf. This opens the door of the large ventilated oven. Both ranges have the reversible long center, and the double oven range has four cooking holes over the fire. A large nickel plated oven panel, bearing the word Royal, is placed on the oven door, and the ranges are provided with a warming shelf of very attractive design.

THE HAWLEY DOWN DRAFT FURNACE COMPANY have been incorporated in Jersey City by Thomas H. Williams, D. L. Bleyer and H. Woods for the purpose of manufacturing furnaces, the capital being \$30,000.

GRINBERG BROS., 154-155 South street, New York, are issuing a circular, printed in blue ink, of their Eagle gas range. The top, front and base of the range are made of cast iron and the body of sheet steel. A nickel panel bearing their trade-mark, an American eagle, is placed on both the oven and broiler doors. The top is made of fret work casting, with the cooking burners located beneath so that flat bottomed utensils of any size may be set over the flame. The oven is 15½ x 17 inches and 11 inches high. The broiler is located beneath the oven and powerful burners are placed in each to insure successful work. The range is made in a variety of styles, some having additional cooking burners on a step attachment at the side, others having two additional burners on the top, which are made also to heat the water back attachment.

ISAAC A. SHEPPARD & Co., Philadelphia, are putting on the market a new oak stove of ornate design, made in the usual sizes and designed to burn either coal or wood. The stove is massive in appearance, has an extra large door, with large nickeled name plate, nickeled fire pot ring, nickeled top and swing cover, nickeled foot rail of novel design, nickeled ash pit door, square base, heavy fire pot, and all cast iron body elaborately ornamented. The arrangement of the stove is such that the draft is said to be under perfect control. The stove is an addition to the makers' well-known line of heating stoves and will, no doubt, be appreciated by the trade.

THE EXCELSIOR MFG. COMPANY, St. Louis, Mo., report an excellent demand for their Charter Oak stoves and ranges. They have just received an order of liberal dimensions to be shipped to a point in France. This concern are working on a number of new goods, which will be ready for the trade very shortly.

ADVISES from Muncie, Ind., are to the effect that the Joseph Bell Stove & Range Company are now working a larger force than at any time since their removal to that place.

THE FAVORITE STOVE & RANGE COMPANY of Piqua, Ohio, are about enlarging their plant with a view to increasing their manufacturing facilities. The present pattern departments and the carpenter shop have been found inadequate,

and the foundations have been laid for a new structure 140 x 40 feet in size. This is located in the angle formed by the molding room and the finishing department annex erected since the original plant was built. The new structure will be fitted with all necessary machinery and will be occupied by the pattern makers, pattern filers and the carpenters making flasks and follow boards for the molders.

MATTHEW HALL, 1927-31 Market street, Philadelphia, is making a specialty of the Colonial Fortune range, with steel hot closet and cabinet, and of the Specialty hot air furnace, which he claims is a natural gas well, generating gas from pea coal, mixing it with atmospheric air, so that a large space in a building is heated with a small consumption of fuel.

THE BLACKMORE HEATING COMPANY, 101 Beekman street, New York, are distributing throughout the Eastern States a circular calling attention to the fact that they are the authorized sales agents for the Triumph line of warm air furnaces made by the Craig Reynolds Foundry Company of Dayton, Ohio. The large warehouse at 291 Pearl street, New York City, has been leased, where the Blackmore Heating Company will carry a full stock of furnaces, together with a complete supply of repairs.

THE MARCH-BROWNBACK STOVE COMPANY of Pottstown, Pa., are distributing circulars calling attention to the Crown warm air furnaces and the Art Franklin grate. The circulars are printed in colors and give a full account of the heaters named. Full directions are also given for setting the Art Franklin grate, the instructions being accompanied by sectional views showing the general scheme employed. The goods are made in numerous styles and sizes and the circulars which are being sent out cannot fail to interest architects and builders, as well as stove dealers generally.

THE CRAIG-REYNOLDS FOUNDRY COMPANY of Dayton, Ohio, have issued a catalogue of the Triumph warm air furnaces and combination heaters which is likely to interest all dealers. The pages are nearly square in size and carry broken and general views of the company's goods, together with ample descriptive particulars relative to construction and operation. The printing is in two colors and the binding is in neat covers. The frontispiece is a bird's-eye view of the main office at Dayton, Ohio, following which is a front elevation of the company's Western branch at 89 Lake street, Chicago. The principles of heating, methods of ventilation and the selection and construction of Triumph furnaces occupy other pages in the earlier portion of the volume. Various forms of the Triumph heater are then illustrated and described, accompanied by tables showing weights, measurements, capacities, &c., of the Triumph combination heater.

D. A. DANGLER, president of the Dangler Stove & Mfg. Company, will sail, June 8, on the Cunard Line steamer "Umbria" for a three months' trip abroad.

THE KERNAN FURNACE COMPANY of Utica, N. Y., are providing additional storage capacity in order to meet the demands of their largely increased business. We understand that when the improvements now under way are completed the company will have 16,000 square feet additional space.

THE MONARCH STOVE COMPANY of Mansfield, Ohio, have recently booked a large order for stoves from a concern in the United States of Colombia. It is reported that the company are building up an extensive trade in South American countries.

THE EXCELSIOR MFG. COMPANY of St. Louis, Mo., have issued a circular illustrating the Sylva and Rustic sheet iron heaters, made in one size each. The Sylva is intended for using hard or soft coal, while the Rustic is arranged for burning wood. The stoves have cast iron tops and bottoms, large door openings, double swinging doors with damper slides and bodies made of extra heavy cold rolled steel of smooth finish. Each stove, when shipped, has packed in it four joints of pipe, one elbow and a tin flange, enabling any one, the manufacturers state, to set up a stove and heat a good sized room in ten minutes.

THE VICTOR STOVE COMPANY of Salem, Ohio, resumed operations at their works on Monday morning of last week.

THE WROUGHT IRON RANGE COMPANY of St. Louis, Mo., have recently furnished the outfit for the galleys of the new American Line steamer "St. Louis." In doing this the company have spared no time nor expense to place in this ship the finest line of goods manufactured. In the main or first galley is a Home Comfort duplex six-oven range, nearly every portion of which was made from special patterns. There are also two portable bake ovens, two French charcoal broilers, two copper jacket kettles and a full equipment of cooking utensils. In the steerage galley is a Home Comfort 5-foot range with steam roasting oven and three 70-gallon jacket kettles. The first cabin pantry is fitted with a special design combination carving table and plate warmer, which is 34 feet long, weighs over 12,000 pounds and is heavily nickel plated. It was constructed from special designs, the top and bottom of the table being of cast iron made in one piece. The top is covered with pure block tin ½ inch thick. The doors of the plate warmer are so constructed that they slide under the top, leaving the front open. There is also a copper Bain Marie with 12 vessels, also a special battery of copper nickel plated urns, the design of which is unique and tasteful. In the officers' serving room is a hot table with plate warmer and nickel plated coffee urns. In the second cabin is a copper Bain Marie with five vessels and two specially constructed hot water vases, as well as an 11-foot hot table.

A report received from the Scientific Commission sent out some time ago by the Pan-American Investment Company of New York to investigate the coal and oil fields of the Republic of Colombia, states that large veins of anthracite coal have been discovered on the eastern banks of the Gulf of Uraba, in the district of Varlen. It is also reported that bituminous coal deposits at Punta Arboletes are being successfully operated by an American company. The oil fields of Colombia are now in progress of development, and many new wells have been found near the Caribbean Sea.

A London firm have been advertising in the English papers for a large number of galvanized iron huts for export to Brazil.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 11 for work including the roof and roof covering and drainage for the United States Post Office Building at Taunton, Mass. Plans and specifications can be obtained from the Supervising Architect at Washington or from the Superintendent at Taunton.

WHITEHEAD & LEWIS of Detroit have been awarded the contract for supplying the heating and ventilating apparatus for a new Government Building at Newark, N. J.

N. F. DRUMHELLER, Lansford, Pa., has the contract to heat the County Jail with steam. The heating apparatus at the Court House is to be remodeled also.

CREED & SMALL have been awarded the plumbing and heating contract for two of J. Thompson's houses on Wellington street, Montreal, Canada.

EX-ALDERMAN JOHN POWERS, Malden, Mass., has been awarded the contract for plumbing the new High School Building.

THE CONTRACT for the steam heating apparatus for the new County Clerk's office at Mexico, N. Y., was awarded to John C. Sullivan of Oswego, for \$1453.

WILEY & CALHOUN of Portland, Maine, have the contract to place a very elaborate system of heating and plumbing in the residence of W. S. Nash, at Redstone, N. H.

THE IOWA BROS. PLUMBING COMPANY, Ft. Madison, Iowa, have been awarded the contract of plumbing the handsome new Cattermole residence, corner of Fourth and Chestnut streets.

THE CONTRACT for heating the new Odd Fellows' Building has been awarded to the Barlow Brothers Company, Waterbury, Conn.

THE JENIVSON PLUMBING COMPANY, Fitchburg, Mass., have just taken the contract to equip the new factory of the G. A. Gane Shirt Company, Leominster, with automatic sprinklers.

SAMUEL I. POPE & Co. of Chicago were the lowest bidders on the contract for constructing the steam heating and ventilating plant for the Federal Building at Worcester, Mass. Their bid was \$7590, and they agree to finish the work in 90 days.

THE NORMAL SCHOOL BUILDING at River Falls, Wis., is to have a new heating system.

THE RINGEN STOVE COMPANY, St. Louis, have been given the award for heating the Harrison School, including the Hyatt & Smith heating and ventilating and the Powers regulating system.

THE BENNETT & WRIGHT COMPANY, Toronto, Canada, are doing more figuring on contracts just now than ever before. They have secured the heating of the Globe Hotel, at Collingwood, Ont., which is being doubled in size, and likewise the heating of R. H. Gray & Co.'s warehouses, Toronto, which are to be rebuilt larger than ever.

ALONZO McMANUS, New Britain, Conn., is erecting a new residence which will be heated by steam.

F. W. GIDDINGS, New Britain, Conn., will erect a \$10,000 residence, to be heated by steam.

NUTTER & SEABURY, 51 Oliver street, Boston, Mass., have closed the following contracts in which they will use the steam and hot water boilers made by the J. H. McLain Company, Canton, Ohio: A double apartment house for Charles Gould at Chelsea, Mass., with two Hummer hot water heaters; two three-flat apartment houses for Thomas Fee, Dorchester, using one D and one E Hummer hot water heater; one three-flat apartment house for Architect George Zimmer, using one D and one G Hummer hot water heater; Cambridge steam heaters will be used in the residences of W. H. Corson, at Brockton, and Dr. Whiting, at Sumnerville.

HARVEY & LEWIS, Hartford, Conn., are erecting a six-apartment house block, to be heated by hot water and to have a plumbing system.

THE S. H. BEARD COMPANY, New Britain, Conn., have the contract for the plumbing of the Nihil Block.

GREEN & LOGAN have the contract for the plumbing in a \$6000 two-family house in Bridgeport, Conn., for H. P. Averil.

SEALED PROPOSALS will be received for the plumbing and drainage for the City Hall Building of Rochester, N. Y., until May 20, at the office of the City Clerk, No. 23 City Hall Building.

FREDERICK SABINE, 146 North Second street, Philadelphia, states that he wants everybody to know that George Lodge will use the Specialty hot water furnace in 155 handsome dwellings which he is erecting at Morris and Tasker streets, Philadelphia, and that the kitchens will be furnished with an Active Fortune range with gas attachment.

E. B. KAISER & Co., 161 Southport avenue, Chicago, have the contract for the plumbing and drainage in the residence of F. T. Connor, 913 Hammond avenue.

PARK BROS., 79 Dearborn street, Chicago, are to do the plumbing and drainage in the two flat buildings of H. T. Davis, 4543 and 4545 Vincennes avenue.

HENRY BAUER, 232 North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of Mrs. Ries, Buckingham place.

G. A. FEHR, 76 Canalport avenue, Chicago, is to do the plumbing and drainage in the flat building of Charles O'Connell, Sawyer and Twelfth streets.

R. TAIT, 605 Sixty-ninth street, Chicago, has the contract for the plumbing and drainage in the flat building of C. Sikema, 6002 Morgan street.

WILLIAM READ, 345 Forty-second street, Chicago, is to do the plumbing and drainage in the residence of J. F. Grok, Paulina street, between Fifty-fifth and Fifty-sixth streets.

SMITH & DORNEY, 1046 North Western avenue, Chicago, have the contract for the plumbing and drainage in the flat building of J. Kildahl, North Hoyne and Iowa streets.

F. SCHOLEFIELD, 310 South California avenue, Chicago, is to do the plumbing and drainage in the flat building of H. Schroeder, 28 North Francisco avenue.

PAUL JAESKE, 42 Centre street, Chicago, has the contract for the plumbing and drainage in the flat building of Paul Kohl, 30 Cooper street.

IRA T. SCHMIDT, 145 Michigan street, Chicago, has the contract for the plumbing and drainage in the residence of J. A. Cope, 447 Belvidere avenue.

P. EICHENBAUM, 815 Armitage avenue, Chicago, is to do the plumbing and drainage in the residence of L. Pierce, 89 and 91 Laughlin street.

P. NACEY & Co., 339 Wabash avenue, Chicago, have the contract for the plumbing and drainage in the apartment building of P. & B. Mahon, State and Twentieth streets.

THE CINCINNATI HEATING & VENTILATING COMPANY, bid \$2150 and secured the contract for the heating and ventilating apparatus for the new school building at Ludlow, Ky.

KENNEDY & SULLIVAN, Holyoke, Mass., who were given the contract for heating and ventilating the Hamilton Street School Building for \$3425 have declined to accept the contract from the city. Chairman Wall of the city committee called a special meeting and after hearing a statement from the Holyoke Steam & Gas Pipe Company it was voted to give this firm the contract for \$2485.

SEALED PROPOSALS will be received until 2 P.M., on May 23, 1895, by the Board of County Commissioners of Watonwan County, Minn., for steam heating a two-story brick and stone Court House Building to be erected in the village of St. James, in full accordance with plans which may be seen at the office of the clerk of the board, Theo. Sonstebj, St. James, Minn., and also at the office of the architect, H. C. Gerlach, Mankato, Minn., and also at the office of the Builders and Contractors' Exchange, St. Paul, Minn.

MCDERMOTT & ASHENBURG, Little Falls, N. Y., secured the contract for plumbing

and heating the Court House to be built at Herkimer, N. Y., for \$1450.

G. H. TAYLOR, Wakefield, Mass., has been awarded the plumbing and heating contract for seven new houses to be built by C. S. Hanks in Wakefield Park.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 5, for low pressure return circulation steam heating apparatus for the United States Marine Hospital at Vineyard Haven, Mass. Drawings and specifications may be had from the Supervising Architect at Washington, or from the superintendent at Vineyard Haven.

THE RINGEN STOVE COMPANY of St. Louis, Mo., have been awarded the contract for heating the Harrison School, in which the Huyett & Smith heating and the Powers ventilating systems will be employed.

MCADDEN & CRAIG, Pittsburgh, Pa., have been awarded the contract for the plumbing of the new plant of the Westinghouse Machine Company, at Brinton, Pa., on the main line of the Pennsylvania Railroad, about 11 miles from Pittsburgh.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 18 for low pressure return circulation steam heating and ventilating apparatus for the United States Post Office Building at Haverhill, Mass. Drawings and specifications may be obtained from the Supervising Architect, Washington, or from the Superintendent at Haverhill.

J. F. SCHUB, Ann Arbor, Mich., has the contract for putting in hot air and steam heating combination in the Congregational Church.

Argon.

Much interest has been excited in the scientific world of late by the discovery of a new constituent of the atmosphere, which has been made by Lord Rayleigh, in England. To this constituent the name of "argon" has been given. The first specimen of the substance that has been received in America arrived recently at the University of Pennsylvania. The gas came inclosed in glass tubes about 6 inches long. Dr. George F. Barker of the Department of Physics of the University gave, in Philadelphia last week, a very interesting lecture on the subject. A tube of argon was illuminated by an electric spark, by which its spectrum was observed. There were exhibited at the same time specimens of the gases hydrogen and oxygen, and the spectrum of each was noted. A decided difference was observed in the spectrum of argon. Dr. Barker gave the history of the discovery of argon by Lord Rayleigh. He stated that this discovery was brought about by the fact that there had always been discrepancies in the nitrogen obtained from the air, but that the same discrepancies in the nitrogen derived from chemical composition were not observable. Lord Rayleigh, in 1892, 1893 and 1894, obtained the weight in grains of a certain volume of gas nitrogen as derived from four different chemical compounds and found the weight of the like volumes the same. An equal volume of the gas derived from the air gave an increased weight and the separation of the nitrogen in the air resulted in the discovery of the new constituent and, possibly, in the discovery of a new element. Argon has been condensed to a colorless fluid under a pressure of 38 atmospheres. It belongs to the so-called "permanent" gases, and as regards liquefaction it occupies the fourth place, coming between carbon monoxide and oxygen. It differs from oxygen in being solidifiable. The question of whether or not it is an element has not yet been decided to the satisfaction of the scientists.

TRADE REPORT.

The Iron Market.

The general advance in blast furnace wages in the principal Western districts puts all chance of lower Bessemer Pig Iron at rest for the present. The raising of wages at a number of Steel works and rolling mills foreshadows a general movement in that direction throughout the whole territory north of the Ohio River and the Alleghenies, and may affect the Eastern makers also. The fact that a leading Pittsburgh concern put up wages in spite of existing contracts with the men is likely to prove a powerful argument with the dissatisfied in other districts. From the standpoint of the buyer this means that prices recently current, and in some sections still prevailing, will not be witnessed again, unless there is a sharp decline in the demand.

Local Foundry Irons in Chicago and in the East are selling quite well, and on the seaboard a slight advance is being obtained in some instances, with more hesitation to contract for the future. The Pocahontas Coke strike has caused the banking of a number of Virginia furnaces.

With the rising tendency in our markets encouragement is given to efforts to get manufacturers together for mutual advantage. The Western Bar Association is doing well. The Wire Nail people are to-day working at the formation of an association. The Cut Nail manufacturers are traveling in the same direction. The Western and Southern Cast Iron Pipe shops are trying to get together, and the makers of Merchant Steel are in conference. Report has it, too, that a movement is progressing to arrange for a common sales agency for Connellsville Coke.

The Metal markets have been quite excited. Copper has been stimulated by a sudden and excited rise in London, for which the ostensible reason is an agreement to limit American exports to 60,000 tons per annum. If such an arrangement exists it does not include important interests. Really the advance is due to an expanded demand.

There has been a heavy movement in Lead in all the primary markets and prices have been sharply advanced, with sellers at the close holding off.

Labor troubles in Kansas, which it is suspected were cleverly engineered, have advanced prices to 3.60¢, and are expected to have a depressing effect on Ore prices, thus helping makers both ways.

Pig Iron.—There has been a fair volume of business in the New York market, and the tone is firmer. Eastern makers have not changed their prices to regular customers, but it is understood that for the first time in a considerable period shipments of some of the leading makers are exceeding current production. We quote \$12 @ \$12.50 for No. 1; \$11 @ \$11.25 for No. 2, and \$10.25 @ \$10.50 for No. 2 Plain, standard brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.25 @ \$11.50 for No. 1; \$10.75 @ \$11 for No. 2; \$10.25 @ \$10.75 for No. 3; \$10.50 @ \$10.75 for

No. 2 Soft, and \$10.75 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10 @ \$10.25.

The general situation in the Philadelphia market seems to favor the selling interests, and in recent transactions small lots of Pig Iron have been taken at about 25¢ advance. Prices are more variable than usual. In some cases \$11.25 is quoted for No. 2 Foundry, more frequently \$11.50, and in a few instances still higher prices are asked, but in the majority of cases \$11.50 is a fair average quotation. The supply is somewhat curtailed by the banking of the Virginia furnaces, but there is enough to go around, and at the moderate advance mentioned there is little doubt that plenty of Iron can be had. At the old prices large sales could still be made, but there is a general disposition to maintain the advance, which, in view of the higher cost of production, appears to be fully warranted. General quotations are as follows for Philadelphia and 30¢ @ 50¢ less for deliveries at points within 100 miles South or West:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.25 to 11.50
No. 2 Plain.....	10.75 to 11.00

A decidedly active week has been experienced by manufacturers of local Coke Iron in the Chicago district. Contracts have not been large, but orders have been numerous. Prices are very firm with a continuous upward tendency. Southern Coke Iron has been comparatively quiet, but a few fair contracts were entered during the week. Soft Irons and No. 2 Foundry are now exceedingly scarce, and attention is being diverted a little more strongly to Ohio Irons to meet the demand for Soft grades. Lake Superior Charcoal is in better demand, and one seller reports sales aggregating 3000 tons the past few days. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.00
Southern, No. 1, Soft.....	12.00 to 12.25
Southern Silvery, No. 2.....	11.75 to 12.00
Southern Coke, No. 2.....	10.50 to 10.75
Southern Coke, No. 3.....	10.00 to 10.25
Southern, No. 1, Soft.....	10.50 to 10.75
Southern, No. 2, Soft.....	10.25 to 10.50
Alabama Car Wheel.....	17.50 to 18.00
Jackson County Silvery.....	13.50 to 13.75
Other Ohio Silvery.....	12.25 to 12.50

The week has been very active in the Pittsburgh district, with large purchases of Bessemer Pig at improved prices. There is also a very much better demand for Foundry, and prices have advanced and are expected to go still higher. Buyers of Pig Iron evidently believe it is a good time to buy and are placing orders very freely. Furnace owners are naturally much pleased with the improvement in the situation and believe they are about to have a period of prosperity that will last for a considerable time. In the feverish condition of the market it is somewhat difficult to quote, but for May and June delivery lower prices can be secured than for delivery after July

1. For delivery this and next month we quote as follows:

No. 1 Foundry.....	\$10.00 to \$11.00, cash
No. 2 Foundry.....	10.25 to 10.50 "

Advices from the Cincinnati Pig Iron market state that a stronger and more confident feeling has been established for Foundry grades, which have sold quite well during the past few days at full prices. Lake Superior Charcoal grades have been especially active, but there has been some increase in the sales of Coke Irons as well. Southern producers show no disposition to recede from their recent strong position, and for delivery after three months demand a further advance of 25¢ per ton, but as a rule recent transactions have been for delivery between now and August. Advices from manufacturers and melters of Pig Iron are encouraging. Orders for manufactured products are being received beyond expectation, and already the volume of business transacted thus far during the current year exceeds that of last year and in some cases more than two years ago. With the present condition prosperous, confidence for the future is entertained. Quotations are given as follows:

Southern Coke, No. 1.....	\$10.00 to \$10.25
Southern Coke, No. 2.....	9.50 to 9.75
Southern Coke, No. 3.....	9.00 to 9.50
Southern Coke, No. 1 Soft.....	10.00 to 9.25
Southern Coke, No. 2 Soft.....	10.00 to 14.50
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	10.00 to 11.00
Hanging Rock Charcoal, No. 2.....	10.00 to 10.50
Hanging Rock Charcoal, No. 3.....	10.00 to 9.50
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The lull in the St. Louis Pig Iron market continues. There are still a number of good sized orders in the market, however, which when closed will keep furnaces well employed. Reports from producers indicate that their output is being shipped as fast as possible, and that there is no opportunity to stock up. Locally, the situation is excellent. Car builders, stove manufacturers, architectural works and machine shops are all busy, and are urging furnaces to fill their orders without delay. Prices are well maintained, and there is at present no disposition to shade the quotations shown below. We quote as follows for cash f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.25 to \$10.50
Southern Coke, No. 2 Foundry.....	10.00 to 10.25
Southern Coke, No. 3 Foundry.....	9.50 to 9.75
No. 1 Soft.....	10.00 to 10.25
No. 2 Soft.....	9.75 to 10.00

A FIRE which occurred last week in the works of the St. Joseph Pump Company, St. Joseph, Mo., caused a loss of about \$10,000 in the galvanizing plant and machinery shop. On Monday a further loss of \$45,000 was suffered by the concern in the burning of the rest of their works. The origin of the fires is unknown, but they are supposed to have been the work of tramps. The plant will be rebuilt at once. The loss is said to be largely covered by insurance.

Metal Market.

Copper.—Prices have undergone a sharp advance and the market is very strong. Deliveries are being made very freely, but the consumption is heavy, leaving little to offer for delivery this month or next. Export movement is quite free, but chiefly on old contracts. There is still more or less speculative interest in the market, but the late short interest has, it is understood, been covered to a considerable extent. A very large demand exists at the present time for Copper for telephone, telegraph, trolley and other requirements, and this branch of consumption is likely to increase in its requirements during the coming months. Consequently the outlook in the Copper market is regarded as exceedingly good. In retail business the demand has been comparatively brisk during the week. The price for small lots of Lake Ingot from store has been advanced to 11½¢ per lb. Common Casting Copper is quoted at 10½¢ @ 10¾¢. A press cable dispatch received from London at the close of the week states that the European producers of Copper have agreed to reduce their output 7% in connection with the agreement of the American Copper producers to restrict shipments to 50,000 tons for a year.

Sheet Copper.—In common with the market for almost all other metals, that for Manufactured Copper has improved very materially in the course of the past week. Several large orders for Cornice Copper have been placed in this section and the inquiry is extremely good. It is expected that the demand for this material will prove to be of unusually large proportions during the coming months. The producing mills are all busily at work on orders. Prices for Sheet Copper are decidedly stiffer, and it is regarded as possible that an advance will be made in the list by manufacturers before very long if the recent advance in the price of raw material proves to be permanent. As it is, manufacturers are not quoting on delivery beyond the month of June, and they are little inclined to make any large contracts even as far ahead as that time. Quotations on small lots of Sheet Copper are unchanged at the net list price of 14¢ per lb.

Pig Tin.—Straits Tin in the wholesale market has been sold as high as 15½¢ in 5-ton lots, but prices receded somewhat later in the week under the influence of a slight decline in the London market. Speculation has been fairly active, but dealings were hardly as large as might have been expected in view of the sharp movement in prices and stimulating reports from the London market. Consumptive demand has been active and prices for moderate sized parcels from store have been advanced ½¢ @ ¾¢, Straits Pig being now quoted by jobbers at 15½¢ @ 16¢ per lb. The jobbing price for Bars is 17¢ and for Banca, 16½¢ @ 16¾¢.

Pig Lead.—A large business has been done and prices have advanced sharply, partly under the influence of speculation, but purchases by consumers and the strong position at primary points have been the main cause of the improvement. Small business has been good, with prices for moderate jobbing quantities stronger at 3½¢ @ 3¾¢ per lb.

Lead Pipe and Sheet.—The renewed activity in the demand for Manufactured Lead, referred to last week, continues unabated. Large orders for Pipe and Sheet received by the plumbers' supply

houses in this city show that stocks in consumers' hands are being widely replenished, and a largely increased volume of inquiry of a substantial kind indicates the return of confidence among purchasers, as a much larger proportion of the inquiry develops into orders than has been the case heretofore. The outlook for a good business is considered very favorable, and the possibility of a return of better prices for manufactured Lead is being discussed now that the raw material is improving its position. Prices in this section are maintained at the list basis of 5½¢ for Pipe and 6¼¢ for Sheet, subject to the usual discount of 20%.

Spelter.—Prices show an advance for the week. The inside rate for small lots from store is quoted at 4¢ per lb for good Western brands. Purchases by consumers have been liberal, and some buying for export account has taken place also, while speculative operations have figured with more prominence than for some time past. The tone of the market in general displays considerable improvement.

Sheet Zinc.—The flurry in the market for Sheet Zinc, referred to in our last report, has continued during the past week, and a further advance of about 1¢ per lb has been made in the interval. Stocks are everywhere extremely light, and it is almost impossible at present to get any quantity from the mills, which are reported to be crowded with sufficient orders to keep them employed for some weeks to come. It is believed that if the demand continues in as large a volume as at present, prices for Sheet Zinc will advance still further within the near future. The bulk of the present requirements is said to come from the fruit jar trade, and this class of consumers seem likely to increase their requirements rather than to diminish them. At the present time Zinc in casks is not to be had at less than 6½¢ per lb in this market, and no large quantity can be obtained at short notice under any circumstances just now. For broken lots jobbers are asking 7¢ per lb.

Antimony.—There is rather better tone to the market, but prices have not gone above 8¢ for Hallett's and 9¢ for Cookson's, in small parcels.

Nickel.—Quotations are 35¢ @ 40¢ per lb, according to size of lot.

Tin Plates.—A considerably better feeling has developed in the market during the week under review. A very fair amount of business has been done in foreign Cokes for future delivery; but spot orders in this line continue very moderate in extent. It is expected that canners' requirements will shortly call for a very considerable amount of this material, and importers are looking on this trade to help them out on past deficiencies. So far as can be discovered, the outlook for an exceptionally large business for the canning trade this season is very bright. It was feared that the recent frost in some parts of the country would be likely to seriously affect this class of consumers, but the latest news is reassuring as to the extent of the damage done by it to the fruit and other early crops. Sales of Charcoal Tin have been merely moderate. Relatively the largest business has been done in American Terne Plates, prices for which have been but a fraction below the most attractive terms on foreign material. Stocks of imported plates are not at all large, either on this or the other side of the water,

and the market appears to be gradually strengthening both here and there. Should any considerable increase in the demand spring up it is expected that prices will advance unless the output of Domestic Plates increase sufficiently in volume to neutralize the effect of restricted imports. Home production is gradually increasing, and the use of American Tin and Terne Plates grows correspondingly. It is the general opinion of the trade that the day of Welsh Roofing Plates in this country is entirely past, and that in the near future this material will be exclusively supplied from American works. At the present time a large amount of the demand from consumers for Terne Plates is filled directly from the works; and, excepting for purely local business, Eastern dealers and jobbers are month by month handling less of this class of Plates.

A special cable dispatch from London, dated May 15, to *The Iron Age* reports on the British Tin Plate market as follows: The Tin Plate market has been less active, owing to firmness of makers and buyers being unwilling to pay enhanced prices. Shipments to Russia have been large. Stocks at shipping port are estimated at 236,000 boxes. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 1C 14 x 20	9/	9/3
Siemens Cokes, 1C 14 x 20	9 ¼/	9 ½/
Terne, 20 x 28	9 ¼/	9 ½/
Charcoals, 1C 14 x 20	11/	13/6

Sheet Iron.—The condition of both Black and Galvanized Sheets is steadily growing better. A very large demand exists for both descriptions of Iron, and prices for Common Black Iron are quoted higher this week. Mills continue to take orders only up to July 1, under the understanding entered into by the manufacturers a few weeks ago. Galvanized Iron is in particularly active demand in this section, but agents are making quotations for immediate acceptance only at current rates. It is thought that list prices must shortly advance in sympathy with the rise in values of all other iron products. Light Sheets for tinning purposes are active and firm. Small lots of No. 27 Common Iron, from store, are quoted at 2.80¢ per pound. Galvanized Sheets are quoted at 75 and 5 % @ 75 and 10 % off, according to size of order and conditions of delivery.

Chicago Report.

Scrap.—The local trade has been light, but country merchants have been selling briskly to their neighboring mills. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$6.50	...
Machinery Cast.....	5.50	...
Malleable Cast.....	5.00	...
Stove Plate (free of burr).....	4.00	...
Burnt Iron and Grate Bars.....	3.00	...
Sheet Iron and Hoops.....	2.00	...
Plow Steel and Breaking Stock.....	4.00	...
No. 2, such as Shovels, Hoes, &c.....	3.00	...
Old Boilers—whole (Iron).....	3.00	...
" " Iron—cut in single Sheets and Rings.....	5.00	...
Old Gas-Pipe and Boiler Tubes.....	5.00	...
Cast Borings.....	3.00	...
Turnings.....	4.00	...
Horseshoes.....	7.50	...
Copper Wire and Heavy.....	8	...
Copper Bottoms.....	7	...
Copper Clips.....	7 ½	...
Heavy Brass.....	6 ½	...
Light Brass.....	5 ½	...
Pipe Lead.....	2 ¼	...
Tea Lead.....	1 ½	...
Zinc.....	1 ½	...
Rubber.....	4	...

Anthracite.—Nearby trade is improving, but business further West has not yet begun to move. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.60	\$4.75
Milwaukee, Wis.....	4.60	4.75
Kansas City, Mo.....	7.80	7.95
Council Bluffs, Iowa.....	7.80	7.95
Lincoln, Neb.....	7.95	8.10
Sioux City, Iowa.....	7.80	7.95
Aberdeen, S. Dak.....	7.85	8.00
Dubuque, Iowa.....	5.90	6.05
Madison, Wis.....	6.10	6.25
St. Paul, Minn.....	7.10	7.25
Burlington, Iowa.....	6.10	6.25
Des Moines, Iowa.....	7.60	7.75
Davenport, Iowa.....	5.90	6.05
St. Joseph, Mo.....	7.80	7.95
Leavenworth, Kan.....	7.80	7.95
Omaha, Neb.....	7.80	7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

A CONTINUED IMPROVEMENT in business is noticeable, showing itself not only in an increased volume of sales, but more decidedly in the better tone which pervades the market and the more hopeful feeling which rules, not only in Hardware circles, but in other lines of trade, some of which feel the improvement more positively than do the Hardware and Iron interests.

During the past week the Hardware market has experienced few openly announced changes in price, but there is a perceptible stiffening on some lines which have been irregular and low. As a result a good many extreme quotations have been withdrawn. The trade are buying with less reserve and showing a willingness to anticipate their wants more generously than heretofore, a disposition which is induced by the increased demand which is setting in upon them from their customers. Some of the large buyers are placing orders quite freely without solicitation, especially for the many lines which are acknowledged to be low and in which a further decline is not anticipated. Under these circumstances it is the part of wisdom for manufacturers to be very careful about booking orders for future delivery at present prices. There are uncertainties in regard to labor and the raw material which should be carefully considered, and it is desirable that manufacturers should be in a position to avail themselves of any favorable turn in the market rather than be loaded up with orders at unremunerative prices. Some of the strength which characterizes the market is undoubtedly the result of conference and agreement between the manufacturers, and this is not as significant as it would otherwise be of the general tendency of the market. Apart from such movement, however, there is undoubtedly a better tone, although the improvement is sometimes exaggerated in the references to it by the daily press. It will be seen from the special reports given below that many sections are experiencing this better feeling, and that our correspondents consider that the tendency of things is evidently toward a still further improvement, with a prospect of an excellent old time business before long.

Advices from Chicago.—Shelf Hardware continues active and goods are now moving in larger quantities than at any previous time this year. All kinds of merchandise are in excellent demand, with a specially heavy movement in seasonal goods owing to the recent hot weather. House Furnishing Goods are called for much more freely. Tinware and Tin Plate are active. The Bicycle trade is heavy, with special scarcity in ladies' wheels. The situation has been greatly improved by the strengthening of prices in staple goods. This change was all that was needed to give buyers confidence in a better basis of values. Prices are hardening on many lines and quotations now received by jobbers are in most cases for immediate acceptance only. Instances are reported in which quotations have been withdrawn by wire before mail advices were received by the buyer. Prospects for future business are as bright as ever. It is not believed that the frost of the past week has done so much damage as is indicated in the daily press.

Notes on Prices.

Wire Nails.—The improvement in the Wire Nail market, to which reference was made in our last issue, has continued, with a further and marked strengthening in tone. Manufacturers continue to quote only for immediate shipment and refuse to accept orders for delivery later than May 31. They are evidently determined to have their order books cleared by June 1, that they may thus be in a position to put into operation the plan on which manufacturers have been working for some time. In the mean time prices are decidedly higher and several of the leading mills refuse to quote less than \$1, f.o.b. mill. There are other mills, however, by whom, up to this time at least, the quotation of 95 cents is made, and in some cases this has been slightly shaded. The price from store in New York has also been advanced to \$1.25. It is understood that negotiations with a view to completing the agreement under consideration have been progressing favorably, and an important meeting of the manufacturers, at which the matter may be determined, is being held today, but up to the time of going to press we are not in receipt of advices as to the action taken. It is obvious that to have the movement a successful one it will be necessary to have a strong organization, which will control the output and regulate the policy of the associated manufacturers.

The policy which will be adopted in regard to prices is a matter in which the trade are also much interested, and an effort will be made to conserve the interests of the jobbing trade, by whom the goods will, of course, be principally distributed. It is not intended, we are advised, to make a price that will be unduly high, though it will be necessary to make a considerable advance on prices which are now ruling. It is anticipated that the new arrangements will call for a revision of the Nail card, and perhaps some radical changes in this direction. The advisability of recasting the list from which miscellaneous Wire Nails are sold is also being considered. The important question in which the trade are principally interested is as to the probability of this arrangement being put in operation. It is, of course, impossible to forecast the outcome of a matter which is beset by so many difficulties and con-

nected with which there are so many conflicting interests, especially as several carefully devised plans looking to the same end have heretofore proved unsuccessful. Those, however, who are most closely identified with the movement are hopeful of its success. It will certainly be a desirable thing for the trade at large if some such arrangements are consummated and result in giving regularity and evenness to the market.

Advices from Chicago.—The past week was quite an exciting period in the Wire Nail trade. The jobbers advanced their quotations to \$1, as stated in last report, and at the close of the week made another advance to \$1.10, Chicago, for lots of all sizes. Manufacturers advanced their prices fully as rapidly and are now quoting factory lots on the basis of \$1.10, Chicago delivery. All orders recently taken by them have been for May delivery only with immediate specifications and subject to the ability of the mill to ship before June 1. Many inquiries have been received for June shipments, which have invariably been turned down. A considerable advance is expected on prices for future shipment when manufacturers decide to begin to book such orders.

Cut Nails.—There is no change in the price of Cut Nails, the market for small lots from store in New York being represented by 95 cents, this quotation being made on the basis of 60-cent average, with an advance in the base price where the average is less. The market has a perceptibly firmer tone, and the trade would not be surprised if advanced prices were announced before long. It is understood that the manufacturers have been conferring with a view to reaching some understanding by which prices will be maintained, and possibly advanced, especially in case the proposed negotiations between the Wire Nail manufacturers are carried into effect. The Cut Nail mills naturally desire to be in a position to avail themselves of any improvement in the market, and at the same time the Wire Nail manufacturers, who are anticipating the announcement of considerably higher prices for their goods, will welcome any action taken by the Cut Nail mills which will make a corresponding advance in the price of Cut Nails.

Advices from Chicago.—Manufacturers report the continuance of fair sized orders. They have made a slight advance in prices, but anticipate a larger advance in the near future. Jobbers quote small lots at \$1

Barb Wire.—The Barb Wire market is characterized by a somewhat firmer tone and some low quotations have been withdrawn. The volume of business is good.

Advices from Chicago.—The condition of the Barb Wire trade corresponds with that of Wire Nails. Jobbers have advanced their prices on small lots to \$1.65 for Painted and \$2 for Galvanized. They would probably make a concession of 5 cents per hundred on carload lots, but these quotations are liable to change very quickly in view of the stiffening of prices by manufacturers. The demand has been heavy, raw materials are dearer, labor is uneasy, and a decided upward movement in prices would not be surprising.

Old Metals.—There has been a considerable improvement in the market for Old Metals, and the outlook is regarded as favorable for this class of

material. Higher prices for Ingot Copper have been followed by an advance in the prices of Old Brass and Copper. The demand for Scrap Iron has been good, but no change has yet developed in prices, which are fairly held at last week's quotations. Dealers' purchasing prices for moderate sized lots, New York or Jersey City delivery, are about as follows:

Heavy Copper.....	lb 7½¢
Light and Tinned Copper.....	lb 7 ¢
Heavy Brass.....	lb 5½¢
Light Brass.....	lb 4½¢
Lead.....	lb 2½¢
Tea Lead.....	lb 2½¢
Zinc.....	lb 2½¢
No. 1 Pewter.....	lb 9½¢
No. 2 Pewter.....	lb 4½¢
Wrought Scrap Iron, gross ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap..... gross ton.....	7.50 @ 8.00
Stove Plate Scrap..... gross ton.....	5.00
Burnt Iron..... gross ton.....	3.50

Old Rags, Paper, &c.—The general condition of the market is favorable, with a moderately good demand for Paper Stock, and the outlook is regarded as good for a stimulation of business in the near future; meanwhile quotations remain virtually unchanged. Dealers' purchasing prices, New York delivery, rule as follows:

No. 1 White Rags.....	lb 3 ¢ @ 3½¢
No. 2 White Rags.....	lb 2½ ¢ @ 3¢
Mixed Rags.....	lb 1 ¢ @ 1½¢
Blues and Sds.....	lb 1 ¢ @ 1½¢
Hard Sized White Shavings.....	lb 2½ ¢ @ 3¢
No. 1 White Book Shavings.....	lb 1½ ¢ @ 2½¢
No. 2 White Book Shavings.....	lb 1 ¢ @ 1½¢
Light Book Shavings.....	lb 1 ¢ @ 1½¢
No. 1 Mixed Shavings.....	lb ¾ ¢ @ 1 ¢
No. 2 Mixed Shavings.....	lb ¾ ¢ @ 1 ¢
No. 1 Printed Books.....	lb 1 ¢ @ 1½¢
Ordinary Mixed Books.....	lb ¾ ¢ @ 1 ¢
Newspapers.....	lb ¾ ¢ @ 1 ¢
No. 1 Manila Paper.....	lb ¾ ¢ @ 1 ¢
No. 2 Manila Paper.....	lb ¾ ¢ @ 1 ¢
Bogus Paper.....	lb ¾ ¢ @ 1 ¢
Common Paper.....	lb ¾ ¢ @ 1 ¢
Straw Chips.....	lb ¾ ¢ @ 1 ¢
Binders' Clippings.....	lb ¾ ¢ @ 1 ¢
Jute Butts.....	lb 1½ ¢ @ 1½¢
No. 1 Jute Bagging.....	lb 1 ¢ @ 1½¢
Mixed Bagging.....	lb ¾ ¢ @ 1 ¢
No. 2 Bagging.....	lb ¾ ¢ @ 1 ¢
Hemp Twine.....	lb ¾ ¢ @ 1 ¢
Manila Rope.....	lb ¾ ¢ @ 1 ¢
Jute Rope.....	lb ¾ ¢ @ 1 ¢
Mixed Rope.....	lb ¾ ¢ @ 1 ¢

Old Rubber.—The market is rather stronger, with some slight improvement both in the demand and in prices. The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, gross lb.....	3 ¢ @ 3½¢
Rubber Shoes, carloads, delivered at factory, gross lb.....	4½¢
Rubber Shoes, less than carloads, gross lb.....	4½¢
White Wringer Rolls, gross lb.....	3½¢
White Syringes, gross lb.....	3½¢

Trade Notes.

THE NEW MACHINE SHOP for the Goulda Mfg. Company, at Seneca Falls, N. Y., will be designed and built by the Berlin Iron Bridge Company of East Berlin, Conn. The building, as designed, will be constructed with a steel frame and a 15 ton traveling crane.

THE MEEKER FOUNDRY COMPANY, Norwalk, Conn., are to enlarge their plant.

THE CO-PARTNERSHIP which has conducted the business of the Union Jobbing Foundry, Stamford, has been dissolved, Wm. S. Reynolds retiring. The business will be continued by Frank A. Jones and Emil A. Young, under the old firm name.

THE UNITED STATES HEATER COMPANY are having great success with

their Capitol Graphite Pipe Joint Cement, which they offer to the trade as a desirable substitute for red or white lead. It is intended for use on all kinds of screw joint pipe work. They claim it is not affected by gas, ammonia, alkali or any liquors, makes a perfect joint—one that may be opened with ease at any time—and is very economical, 1 pound of the mixture being more than three times the bulk of 1 pound of lead. They will send a 5-pound sample can by express on receipt of 75 cents in stamps.

A ONE-STORY ROLLING MILL, 120 x 121 feet, is being built at Olney, Pa., by the Parsons Manganese Bronze & Copper Company of that place.

THE COMINS MFG. COMPANY, Upper Sandusky, Ohio, have added the manufacture of the Underwood Gas and Gasoline Engines to their business, and will push these goods considerably. At present it is said that the demand for the engines is greater than the supply.

THE LALANCE & GROSEAN MFG. COMPANY, 19 Cliff street, New York, report a remarkable expansion in the demand for their Milk Cans and Milk Can Stock. This department of their factory, at Woodhaven, L. I., is kept running full, night and day, to satisfy orders. The company are now enlarging their facilities to meet the increase in their business in connection with these goods. They have lately brought out a new Patent Handle for Milk Cans which has been much appreciated in consequence of the greater ease which it affords in the handling of the cans.

H. MILLER & SON, Baltimore, Md., propose making some considerable improvements and extensions in their Tin Box and Can works during the summer.

THE STOCKHOLDERS of the New Britain Brass Company, New Britain, Conn., have organized, with the following board of directors: John Walsh, John F. Reynolds, Peter Long, B. F. Gaffney, Samuel Bassett, John Sheehan and P. J. Flannery. The following officers were elected: John F. Reynolds, president; P. J. Flannery, vice-president; B. F. Gaffney, secretary; Peter Long, treasurer. The capital stock of the company is \$10,000. The company will manufacture a general line of Brass Goods. It has not been decided as yet as to whether the company will build a new factory or have their manufacturing done at one of the large factories in town. It is probable that the latter course will be pursued for the present. The officers of the company are arranging to begin work as soon as possible.

DE WITT WIRE CLOTH COMPANY, until recently at 32 Reade street, New York, have moved to 17 Warren street, where they have the steel floor and two basements. Having outgrown their former quarters they were compelled to enlarge their business facilities, having now three floors, each about 75 x 25 feet in dimensions. They manufacture and deal in almost every description of Wire Cloth, including Woven Wire Cloth for Window and Door Screens, Brass Wire Cloth, Strainer Cloth, Bronze and Tinned Copper Wire Cloth, Iron Wire Cloth, Galvanized Wire Cloth, Poultry Netting, Wire Ropes and Sash Cord, Brass, Copper, German Silver and Aluminum Wire, Door and Window Screens, &c. The company have factories at Belleville, N. J., and Philadelphia, Pa., the whole being under the supervision of F. J. Bartlett, president and general manager, who also spends a

considerable portion of his time at the New York office.

THE RIDGWAY FURNACE COMPANY, 6 Portland street, Boston, Mass., in their page advertisement in another part of this issue, show the latest Ridgway Heater and refer to its special feature—viz., revolving open fire pot—and to the fact that the Furnace is sold to the trade only. A catalogue will be sent to all inquiring dealers.

THE MICA WORKS of John A. White, Warren, N. H., were burned out on May 15, with loss of \$15,000, partly covered by insurance.

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THE METAL WORKER.

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A Rising Market.

The buyer may look forward to paying higher prices for his stock in the near future. In the many branches of trade there is no great amount of material in the warehouses and orders to any considerable extent will bring an advance in prices all around. In plumbers' materials discounts have been withdrawn and prices have already made an advance. Cast iron soil pipe and brass goods are now higher than they were a short time since. Some of the goods used by the steam fitter have risen and it is probable that radiators can be bought lower at this time than they can a little later on, as the prices are not perfectly satisfactory to the makers. It is thought that some who will need such goods are making a mistake in not taking advantage of the present low prices. The buyer, however, has so many times seen the market fall when a further drop seemed impossible that a hesitancy is felt about placing any confidence in a stiffening of the market now. There seems to be, however, a well grounded opinion that goods will, before long, cost more, and that when the buildings of the year reach a point where the finishing materials are needed a further advance is probable. It has become a general custom to buy in small lots, or only what was needed, with the expectation that the next purchase would be made at some concession in price, but this habit may now prove to be a disadvantage. Methods must change on a rising market or a loss will follow. Buyers who dispose of their goods quickly and are constantly in touch with the market are likely to catch its drift and prepare accordingly. Buyers who do not sell their stock so promptly are not apt to keep as well informed on prices, and sometimes establish a price which it is difficult to raise when the stock is replenished at a higher price. It does not require such

close attention to do a profitable business on the falling market of the past two years as is necessary to prevent loss on a rising market. It is the smaller tradesman who runs a diversified business who is in danger of losing sight of the market in one branch while engaged intently for some time in another branch. He is likely to contract for work in the unwatched branch at a lower figure than he would if he was well acquainted with the market. It is probable that some friction may arise in dealing when an advanced price for work or material is asked, but if the situation warrants it a little explanation and courage will result in an amicable understanding.

Competition.

Competition has its compensations as well as its drawbacks. There are many lines in which competition is obviously a great deal too severe for the welfare of the parties most deeply interested. It can be pushed entirely too far. Yet healthy competition, if such a term is permissible, is really desirable. This can be illustrated by a few instances taken from actual business experience. Some time since a manufacturer concluded to venture into a somewhat new and untried field and to make a higher class of goods than his trade had previously taken. For a considerable period his progress was slow and quite discouraging. But a watchful rival had perceived what was being done, and in the belief that the results were satisfactory boldly ventured in the same line. The additional advertising thus done and the more vigorous efforts then put forth to educate the trade greatly stimulated business, and, much to the surprise and satisfaction of the pioneer house, their orders rapidly increased and they found themselves firmly established in their new line much earlier than they had anticipated. Another instance is recalled in which a firm had by honest workmanship and careful methods built up a large trade for their products, made under a distinctive trade mark. They proved ultimately a shining mark for other manufacturers, who sought to occupy a part of their particular field. But these competitors made the mistake of invariably claiming that their products were "just as good" as those of the old house. The consequence was that the newcomers only succeeded in more firmly impressing buyers with the conviction that the old house made the standard goods for the trade. Again, it is rather a curious fact that in important trade centers it is frequently better to have three compet-

ing concerns than two, if there must be division of the local trade. When there are but two houses their prices are directly compared with each other by all customers, to the disadvantage of the dearer seller. With three houses or more a better chance exists for independent action to secure better prices.

Persistence.

Persistent effort—the determination to stick to a thing—has wrought success out of failure in many a case. Persistence and genius seldom go hand in hand, but every man may have the encouragement that what genius fails to do persistence may often accomplish. General Grant, in homely but emphatic language, gave us an insight into his persistent and indomitable character in those words to Lincoln: "I propose to fight it out on this line if it takes all summer." Few are the great and lasting things of this world that do not bear the marks of persistence. The power loom and the telegraph were not invented and adopted in a day. Good-year with his India rubber and Fulton with his steamboat met bitter opposition before success was assured, and the masterpieces of literature and art are, as a rule, the result of long continued effort. "If at first you don't succeed, try, try again," is not a motto for children alone. Adherence to its teaching can only crown man's efforts with success. In the common every day work of the shop these words should still be a guiding power, for certainly a man's ability is to be judged by what he accomplishes, and that in turn must depend upon his persistent efforts. The "stick to it" principle seems to be so much a part of the nature of some men that a difficult piece of work seems almost as good as completed if they are set to do it. Can any one question that this characteristic has not a money value and that the man who displays it will not be better paid than he who is thrown down by the first opposition and appalled by the first indication that there is trouble with his work.

The St. Pancras district, one of the largest divisions of the city of London, is erecting a new electric light station in conjunction with a garbage destructor, for the purpose of utilizing the heat generated by the combustion of house and street refuse for raising steam in boilers for dynamos to be installed for the electric lighting of a portion of the district. Similar steps are also being taken in the Shoreditch district of London, tenders being invited for the erection of a refuse destructor capable of dealing with 20,000 tons of refuse per annum. The combustion of this amount of refuse is expected to yield something like 400 horse-power.

THE LETTER BOX.

Brazing.

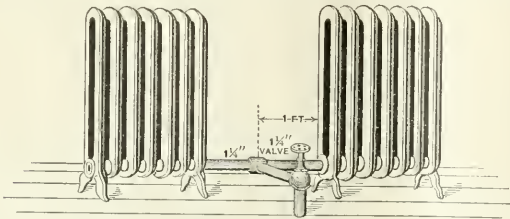
From G. M., South Boston, Mass.—Would you be kind enough to explain through the columns of *The Metal Worker* how brazing is done? A young man and myself are interested in bicycles and would like to build one, but brazing the joints sticks us.

Answer.—If the tubes of which the bicycle frame is composed are of steel, greater care would be required in brazing than with iron, as the former is more liable to be injured by overheating. The work to be joined is first prepared by filing or scraping, so a clean surface will be presented to the action of the flux. The parts to be joined are then placed in position and firmly secured by means of binding wire, riveting or clamps. Granulated spelter and borax are to be mixed with a little water in a dish, and then by means of a small spoon or V shaped strip of metal placed over the joint. This much done, the article is held over a clean charcoal fire, on a forge, until the moisture is slowly evaporated. Too much heat applied at once would cause the water to boil and displace the spelter. Heat is then applied until the article is brought to a cherry red heat, when the borax and spelter fuses, causing the latter to fill the joint. After the spelter has run through the joint the article can be taken from the fire and allowed to cool. In case the work

purpose, the air supply is usually furnished by means of a blower. Rubber hose of suitable size is attached to each tube of the blow pipe, and connected with the gas and air supply. If a forge is not at hand, a sheet iron pan is to be partly filled with coke, and on this a few pieces of charcoal laid. The blow pipe being lighted, and the blue flame being obtained by means of the stop cocks, the blow pipe is used to ignite the charcoal. The article is then laid on the charcoal and the flame of the blow pipe brought against the upper part and sides until the spelter melts and flows about the joint. The object of placing the work on the ignited charcoal is that the heat may be applied from below, while the blow pipe flame strikes the top and sides, thus melting the spelter and causing it to fill the joint.

Extending a Heating System.

From TRANSPANTED, New York.—I submit a picture of some work that was done to a steam heating system by an out of town steam fitter. After the job had been completed the owner built an extension to the house. Where the riser came through the floor he put a valve and connected it with a T hull headed, running a pipe from each side of the T to a radiator 20 inches high, the radiators being 1 foot apart. As a result one of the radiators works properly and the other fills with water. I



Extending a Heating System.

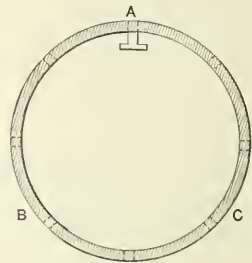
is of such a shape that it would be inconvenient to use the ordinary forge, it may be found necessary to employ a blow pipe, using illuminating gas and air. This kind of blow pipe requires about 8 parts of air to 1 of gas. In order that the air and gas should be properly mixed when burning, two tubes are used, one within the other, the smaller for gas and the larger for air. They are provided with stop cocks for regulating the supply of each, so a clear, blue flame will be the result. While the illuminating gas will probably have sufficient pressure for the

would like to have some of the practical readers of *The Metal Worker* describe how the connection should be made.

Riveting Iron Pipe.

From W. B., Chicago.—When joints of pipe made from heavy iron are to be riveted together, it is rather difficult to place the rivets through the holes. It is supposed the end holes are punched in the iron before forming, and then two joints are put together so the holes will come opposite. The next step is to put in the rivets. One method is to place a rivet on the riveting stake and then slip over the pipe until the hole is

over the rivet. As it is quite dark inside of the pipe, it is difficult to see the rivet, and besides it is liable to be knocked off the stake into the pipe. The operation is rather tedious, as the pipe must be removed from the stake for each rivet. Another method is to use a notched and split stick, into the end of which a rivet is placed. The stick is run into the pipe, and an effort made to push the rivet through the hole. If the operation is successful,



Riveting Iron Pipe.

the workman holds the rivet with his fingers until the pipe is placed on the stake. Unfortunately, the rivet is liable to slip out of the workman's grasp, when the operation must be repeated. In the accompanying illustration is shown a method by which the above-mentioned difficulties may be avoided. Let A B C represent the small end of a joint of pipe. The holes are punched so as to allow the rivets to slip through, but the holes should not be too large. It is convenient to place the joint of pipe on the stake with the small end next to the bench. A rivet is then placed in one of the holes, as shown at A, and by giving the end of the rivet a slight tap with a hammer an edge can be turned over that will prevent the rivet from slipping out. The remaining holes are then supplied with rivets in a similar manner. By placing the small end of the pipe into the large end of another joint so the rivet ends come opposite the holes and then placing the pipe on the stake, it is an easy matter to draw each rivet through and then do the riveting.

Varnish for Tools.

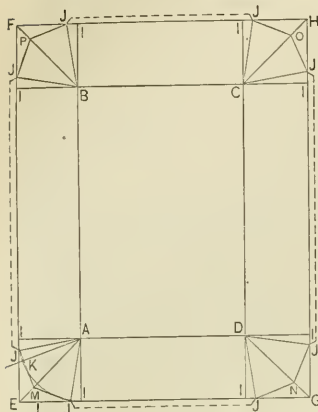
From M. R. N., Washington, D. C.—Please give me a receipt for varnish to keep bright tools and similar goods from tarnishing.

Answer.—A receipt given as a varnish for tools is as follows: Melt together 40 ounces of tallow and 2 ounces of rosin and strain while hot, apply with a brush to tools and it will prevent them from rusting. Another receipt described as a varnish for polished metal is to pound bleached shellac in a mortar and then put it in a bottle of alcohol, agitating the alcohol frequently until it has dis-

solved as much shellac as it will; then pour off the clear liquid. The metal surface is first warmed and the varnish applied to it with a brush, giving a transparent coating that will protect the polished metal.

Dripping Pan Corners.

From K. S. F.—In reply to the request of the correspondent, "A. C.," Milwaukee, for a method of securing



Dripping Pan Corners.—Fig. 1.—Plan of Pan Submitted by "K. S. F."

the pattern of a square pan made in one piece, with corners so cut as to come up under the wire, I submit the following plan of pattern, which may prove to be of value to him as well as to other readers of the paper. Referring to Fig. 1 of the accompanying sketches, draw to the desired length the lines A, B, C, D, which will represent the size of the bottom of the pan. Parallel to these lines and at a distance from them equal to the desired slant height of the pan draw the lines E F, H G, F H and E G. Continue the lines A, B, C, D and D A until they cut the lines previously mentioned at the points I. From the points I set off equal to the desired flare of the pan the points J. Draw the lines A J, B J, C J and D J. Place one point of the compasses at A, and with a radius A I describe the arc I I. Set off on the arc I I the distance J K, which equals I J. From A and through

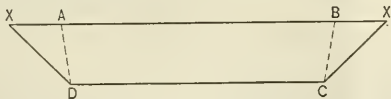


Fig. 2.—Side View of Pan.

the point K draw an indefinite line, as A K; draw the lines A E, D G, C H and B F. Now from the point J, at right angles to the lines K A, draw the line M K, cutting the line A E at the point M. From the point M draw the line M J. This completes the pattern for one corner. Transfer the distance from A to M on the line E A to the lines E G, C H and B F, thus making the points N, O and P. Draw the lines N J, O J and P J. This completes the pattern without the allowance for the wire, which is indicated by the dotted lines.

If the reader should wish to look still further into the subject let him imagine that he has taken a square cornered piece of material the size of E F H G of Fig. 1, and that he has partially formed the pan, of which Fig. 4 would then be a

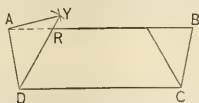


Fig. 3.—End View.

plan and Fig. 2 would represent one side. In this figure the line D C is the same as the line A B or D C of Fig. 1, and the line X X of Fig. 2 is the same as lines E F or G H of Fig. 1. The dotted lines A D and B C of Fig. 2 are the same as the lines A J, D J, C J and B J of Fig. 1. The triangular pieces X A D and B X C of Fig. 2 will be found to be identical in size with E J A of Fig. 1, or are the surplus stock to be turned around the end of the pan, as will be seen from an inspection of Fig. 4. This portion of the pan is double. Thus the whole of the stock between the points J E and J A has been ac-

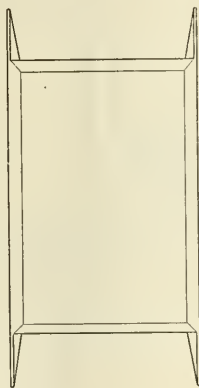


Fig. 4.—View of Partially Formed Pan.

counted for in the triangle X A D of Fig. 2. Draw a diagram, A B C D, Fig. 3, which will represent the end of the pan. The line A D of this figure will be the same as A D of Fig. 2. Place

Fig. 3 is the same as the distance from A to M of Fig. 1. By this diagram I think the correspondent will readily see how the first method gives correct results.

From S. P., Sharon, Pa.—In the Letter Box I notice a request from "A. C.," Milwaukee, for a method of getting the corners of drip pan so that the corners will lay parallel with the wire. I would like to submit the following reply, and if any one can improve upon the method I would like to see it published. After obtaining the desired size and flare lay off on the miter line the depth of the pan finished and obtain the distance from that point to the flare line. Next carry the distance thus obtained along the end of the

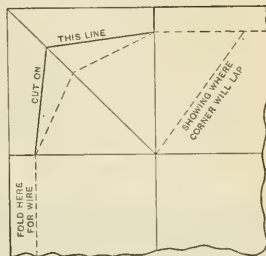


Fig. 5.—Sketch Showing Method Suggested by "S. P."

pan, which will show where the corner will lay when finished. Measure from this point to the bottom of the pan at the corner. Lay off the distance on the miter line, which will be a little higher than the first space set off on the miter line. Cut from this point to the flare line, where the edge is turned over for the wire. I am only a young hand at the business, and perhaps some one can improve on my method or furnish a better one. If so, I wish he would do so. The sketch, Fig. 5, which I send, represents one corner of a pan with straight sides, but the plan will work on flaring ware just the same.

From D. W. McD., Westville, N. S.—In answer to "A. C.," Milwaukee, whose inquiry "How to lay off corners of drip pan?" appeared in *The Metal*

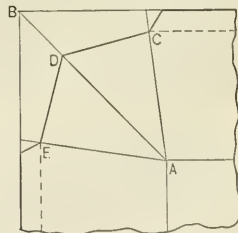
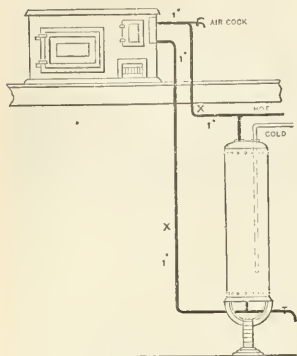


Fig. 6.—Sketch Accompanying Letter of "D. W. McD."

Worker of April 27, I would say that a simple way of doing the work is as follows: After marking off the depth and flare of the pan mark the depth of the notch for the wire, and then with a pair of dividers draw as shown in the sketch, Fig. 6, C, representing the bottom of the notch. Have A, C, A D and A E of the same height. This will allow the edges to lay parallel with the wire.

Kitchen Boiler Below Range.

From F. S. M., *Paulings, N. Y.*—In the Letter Box of *The Metal Worker* of May 11, "P. S. J." submits a sketch of a kitchen range with the boiler in the basement below, which fails to circulate properly and furnish hot water.



Kitchen Boiler Below Range.

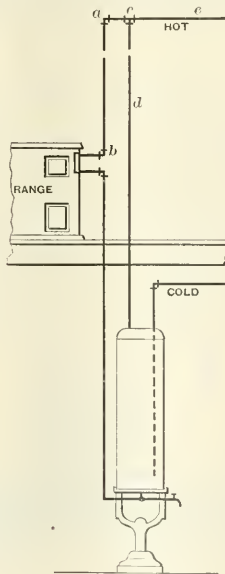
he will run his pipes according to the plan herewith submitted, I think his trouble will be at an end. If the water front is not already tapped for 1-inch pipe, he should have it tapped for that size pipe, and run the flow and return pipes full 1 inch in size from the water front to the boiler. An air cock should be put on the highest point on the flow pipe, or better still, a $\frac{3}{4}$ inch bibb may be used instead, which will serve the purpose of the air cock and also furnish hot water as soon as the water front is heated. This is a job which is "agin' natur'," but if it is piped according to the plans, good results will be obtained.

From J. C., *Boston*.—In *The Metal Worker* of May 11 "P. S. J." asks why the water did not go down to the boiler when it was placed below the source of heat that was intended to apply to it. The answer is simply because it is in defiance of the laws of physics. As hot water is lighter than cold water, it will rise when free to do so. Water circulates because of the difference in the weight of the hot and cold particles of which it is composed; and for a hot water boiler to give the best results, every portion of it should be above the water back to which it is attached.

From G. F. S., *Washington, D. C.*—I notice the inquiry of "P. S. J." in *The Metal Worker* of May 11 and the communications answering it in *The Metal Worker* of May 18, giving suggestions how to start the circulation. If the plumber will put a T at the side connection to the boiler and will place a draw off cock at the side of the T he can start circulation by opening the cock and letting the hot water run down this pipe until it reaches the boiler, when the cock should be closed. After a circulation is started in this way it will continue as long as there is fire in the range. Every time that the fire is drawn the same method of starting the circulation would have to be followed. He will find in *The Metal Worker* of October 27, 1888, the illustration and description of a method of making water circulate two and three

stories below the fire. Another method of securing circulation in the right direction would be to place a check valve near the water back on the pipe which leads from the water back to the bottom of the boiler. There should be a pet cock placed on the pipe from the water back to the side of the boiler at the point where it turns down. This should be opened occasionally to let the air which would naturally accumulate in it escape.

From W. R. G., *Augusta, Maine*.—In *The Metal Worker* of May 11 "P. S. J." Jersey City, submits a sketch of a range boiler placed below the range, and wishes to know if such an arrangement can be made to work. The sketch herewith will show how it may be done. The hot water pipe, leaving the range, is carried 5 or 6 feet above it and then is carried directly down to top of boiler, the other connections remaining about the same as shown on "P. S. J.'s" sketch. It will improve the working of the job if the pipe which supplies the fixtures with hot water is taken off, as shown on sketch, through pipe marked *c*, but it is not necessary to do so, as the hot water pipe may be taken from pipe *d* anywhere from fitting *c* to top of boiler. If



Kitchen Boiler Below Range.

it is taken from pipe *d* it will be necessary to run a vent pipe from ell marked *a* to the tank which supplies the system. If that is not done the air will gather and prevent the water from circulating.

Sweeping Chimneys of Large Buildings.

From J. S. S., *New Jersey*—I wish to avail myself of the fund of information at the disposal of *The Metal Worker*, and ask for the most approved method of cleaning chimney flues, square and rectangular, averaging about 8 x 8 and 8 x 12. We have only cleaned flues on rare occasions, and then used fir boughs tied together and drawn through the flue. A figure is

asked for cleaning about 200 flues along with the general repainting of one of our large hotels.

Answer.—Those who make a special business of chimney cleaning provide themselves with brushes made of thin, flat steel wire. These brushes consist of a top and bottom loop of iron not over 5 inches long for attaching a rope, and from the center of this loop the thin steel wires radiate in every direction. Some use round brushes of different diameters and others have rectangular brushes of different dimensions. These are used in connection with a round iron ball and are lowered down from the top of the chimney, the ball being sufficiently heavy to pull the brush after it, and are operated by a man at the top of the chimney. Another man goes inside of the building and is provided with soot bags and canvases, so that grates, fire places and other openings in the chimney can be effectually stopped up, and the fine ashes and soot are caught in the bag and prevented from escaping into the rooms. Some ingenuity and skill may be displayed in the construction of the bags and other materials for stopping the flues. In some cases the flues are so crooked that the brush cannot be pulled to the bottom of the chimney by means of the ball weight. Then the ball is lowered from the top of the chimney, and on making its appearance at the bottom the ball is detached from the rope and the wire brush attached in its place, with the rope also attached to the loop on the under side of the brush. Then the flue is cleaned by drawing the brush up and down by the man at the bottom and the man at the top. In some of the large and elegantly furnished hotels of New York the flues to the grates in the apartments of some of their guests are cleaned while the guests are taking their morning drives, and the work is so carefully done that no effort is made to protect the furnishings beyond that which is made by the chimney sweeper, who only requires a short time to do the work.

Milky Water from Boiler.

From H. D. T., *Scranton, Pa.*—Will some of the readers of *The Metal Worker* explain why the water which comes from a boiler which has been in use about six years is milky looking when it is heated?

Enameled Well Points.

From J. ADDISON BROWN, *Riverhead, L. I.*—Can any of the readers of *The Metal Worker* inform me what firms in the Western country manufacture enameled well points; also in what places in New York State are they made?

Shipments of galvanized iron sheets from Great Britain to Australis, South Africa and the British East and West Indies, have shown a remarkable increase in volume during the past few months. The exports of this material to the places named have grown from 200 to 300 per cent., as compared with the average quantity exported in former years.

STEAM AND HOT WATER.

Combination Heating.

The following paper, by John Millar, was read before the Steam Fitters' Protective Association of Chicago:

I have been invited to speak to you to-night upon combination heating, that is, that system by which steam or hot water is used in connection with a hot air furnace, for the purpose of making it a more efficient system of heating.

Where and when this combination originated, I know not; perhaps the idea was first caught from the water front, or water back, used in ranges for a hot water supply for bath and cooking purposes, and adopted by some enterprising plumber or steam fitter, to heat a room in addition. However that may be, it is now one of the recognized systems of heating, as evidenced by the fact that nearly all manufacturers of hot air furnaces do not consider their line complete without a combination heater.

This being true, does the steam fitter consult his own interests in holding aloof from work of this description and allow the furnaceman to control this trade? For the steam fitter's part in the construction, or installing a combination plant, is as great if not greater than the furnaceman's.

Opposed by Steam Fitters.

I have had some years' experience in this class of heating, and I never met a steam fitter (except those interested and engaged in the work) who did not condemn combination heating, and generally in very forcible language.

It has always seemed to me a very foolish proceeding, for most of us can remember (and we have not to go back many years either) when the large majority of steam fitters spoke just as strongly against that now popular system, heating by hot water. There may be a few unregenerated steam fitters who have no faith in hot water heating, but I think they are hard to find. So will it be with combination heating; you will all fall in line some day and accept the inevitable, the onward march of the combination.

Does the steam fitter consult his own interests when he refuses to touch or countenance the usurper? For we must recognize the fact that there are people who have very decided opinions about the way in which their houses are to be heated, and these people sometimes get the idea into their heads that a combination system is what they require and will have nothing else.

A Demand to be Supplied.

You may call them "cranks," but if you do not supply them with what they want some one else will.

Heating men come across these people in their endeavors to get customers, and they are just cranky enough to ask for a combination and will not have anything else. They think that hot air heating is the best system and will not have any other. But their building cannot be heated successfully with hot air, and right here the combination

comes in to suit your customer's wants. You may try to make him believe that he does not need a combination, that he requires steam or hot water, but you may fail in the attempt and lose a prospective customer.

The questions now to be discussed are, what are the advantages of this system of heating, and how should the work be done?

Ventilation being considered necessary, in connection with the efficient heating of a house, and the knowledge that pure air is essential for that purpose, the problem confronting the architect or owner now is, "How shall I attain it at a moderate cost for heating and ventilating the building, with economy in fuel for the future?"

It Furnishes Ventilation.

The combination, by means of its hot air pipes and cold air inlets, furnishes the necessary quantity of pure warmed air, the hot water or steam being used to supplement the hot air by reaching rooms at a distance from the heater.

The same results are attained by a system of direct and indirect heating, with steam or hot water, but the difference in cost between the two systems is decidedly in favor of the combination, both as to first cost and economy in fuel.

This is the great advantage that the combination possesses over the hot water or steam systems, and one that is a consideration with many people.

One of the difficulties confronting the steam fitter in combination work is to know what furnace is best adapted for this class of work. Not having had any experience in hot air heating, he is ignorant of the requirements in a furnace to make it suitable for the purpose.

There are a large number of furnaces manufactured that are well adapted for this work. These are fitted with a hot water heater. They are of all shapes and sizes, and have ratings to carry from 75 to 1000 square feet of radiation. The majority of these hot water heaters are made of cast iron.

The Best Apparatus.

The combination furnace that will give the best results is that one whose hot water heater or steam heater is so constructed and placed in the furnace that it will, as little as possible, detract from its hot air heating power. That these heaters do reduce the hot air heating power of a furnace has been demonstrated beyond question, therefore this feature of the combination must not be overlooked, for if you expect that with a hot air furnace rated to warm 25,000 cubic feet of space you can add a heating boiler and warm 5000 to 10,000 cubic feet more space, you make a serious mistake. You must reduce the hot air heating capacity, and right here the difficulty presents itself as to how much should be cut off from the hot air.

A practical knowledge of the power of the furnace you are intending to use is the best and only guide to direct you, for the reason that some furnaces are

constructed with the hot water heating boiler either in the fire pot or as a part of the fire pot. This construction reduces the hot air heating power of the furnace considerably, and, if I had to use one of this construction and wanted to assure myself of a good working job, I would reduce the hot air to the full extent of the amount of cubic feet of space to be heated with hot water. For example, if a furnace is rated to warm 25,000 cubic feet of space without a hot water heater, and a hot water heater is attached that will heat 200 square feet of radiation, or about 5000 cubic feet of space, then I would reduce the hot air capacity by 5000 cubic feet.

The Proper Size.

When making calculations to warm a building with a furnace you must use the same judgment that would be used when estimating upon a hot water or steam job. That is, you would provide a heater that is rated to carry 25 per cent. more than the amount of radiation you propose to put on to it, and when I say that a furnace rated to warm 25,000 cubic feet may be used, I do not propose to put that size into a building containing that amount of space, but I would use the same judgment with a combination furnace that the practical steam fitter would use were he estimating upon a hot water or steam job; that is, to take a boiler rated for 20 to 25 per cent. more heating power than the quantity of radiation intended to be used.

There is another class of combinations, with the hot water heater so constructed that they are contained entirely within the combustion chamber. This construction does not reduce the hot air heating power of the furnace to the same extent that the first mentioned type of heater does.

This form of heater is suspended within the combustion chamber of the furnace, and is made in different shapes; some of cast iron and others constructed of steam pipe. You can readily see that with a hot water heater suspended in the combustion chamber, and in such a position that all parts of it receive the direct action of the heat, and it is entirely surrounded by burning gases, and at the same time does not come in contact with any part of the furnace that is radiating hot air, that it is the best, and the one that will give the best results with the least consumption of fuel.

Capacity of Water Heater.

The amount of radiation that a square foot of boiler surface will heat depends upon the grate surface, or size of the fire pot, and the position of the boiler in the furnace, and also its form of construction.

I have found that a boiler made of steam pipe, and so constructed and suspended in the combustion chamber of the furnace that it hangs close to the fire, will heat from 20 to 25 square feet of radiation for each square foot of boiler surface. You may require to use only one or two radiators on a large size furnace; now in such a case as this, you

will find that the proportion of boiler surface required for each square foot of radiation will be less than if, with a smaller furnace, you were intending to use a larger amount of radiation, so that with a small or medium size furnace and about 150 to 200 square feet of radiation, your hot water heater should have not less than 1 square foot of surface for each 20 feet of radiation. With a large size furnace and from 100 to 150 square feet of radiation, you will require a boiler with 1 square foot of surface for each 25 feet of radiation.

I am now speaking of a steam pipe form of hot water heater, having had some experience with that form of construction. The cast iron, or those that are supplied by the trade with the furnaces, are rated by the manufacturers of them, and you will have to take their ratings of the capacity of their boilers.

Piping a System.

The piping of a hot water or steam combination job is done in the same manner as the regular hot water or steam work. There has been a tendency upon the part of the manufacturers to make the tapping too small, and this has been the cause of many failures. The tapping should be the same for this class of work as would be used in a regular hot water job. This any steam fitter will readily see the force of, but I have seen heaters tapped $1\frac{1}{2}$ inches for three and four radiators, or about 150 square feet of radiation.

When one or two radiators only are connected to a combination heater do not use valves on them. They might be closed by some person not knowing what the results would be. When there are more radiators connected they may have valves, but I think it would be the safest plan to leave one or two without valves, leaving them off the radiators that are likely to be always in use—say a hall or bathroom radiator.

It is the practice in combination work to warm the rooms at a distance from the heater, or rooms that are difficult to warm, with the hot water, and the rooms near the furnace with hot air.

An Important Factor.

To properly install a combination in this way you will erect the hot water part of the system in the same manner as a hot water job. The hot air part would be done also in the regular way, but great care must be taken to have the hot water heater in the furnace the correct size for the amount of radiation connected to it. If it is too large for the amount of radiation attached, heavy firing to warm the rooms heated with the hot air will boil the water, making steam, and probably throw it out of the heater, causing annoyance and perhaps injury to the apparatus. This is one of the difficulties of combination work, it being necessary for a perfect working system that the hot air and hot water should be so balanced that a low fire or a heavy fire acts upon both evenly.

If the hot water heater is too small for the radiation attached, and requires heavy firing to attain the right degree of temperature, then it is possible, and often the case, that it makes that part of the house heated with hot air too warm, so that in one part of the house the temperature is raised too high, while that part in which the radiators are connected is at the temperature desired.

Its Varied Adaptability.

A combination is also well adapted for an old building, where it would be

difficult to run hot air pipes to the second floor without opening up the walls, the hot air registers being placed on the first floor and the radiators on the second floor. The hot water pipes in a case of this kind can be exposed in the rooms without disfiguring the walls.

When heating a building of this description and in the way described, you will naturally think that the plan suggested will be about half hot air and half hot water. You must not take that for granted, for there is always less radiation placed on the upper floors than is required on the first floor, for the reason that the heat ascending from the first floor assists in warming the upper rooms, and, as a combination system seldom has more than one-third of its heating capacity put into radiation, it is advisable to run at least one hot air pipe to the upper floor, but if this cannot be accomplished, owing to the construction of the walls, then I would place a large size hot air register in the first-floor hall. The heat from this register, ascending into the upper part of the building, will reduce the quantity of hot water radiation that would be necessary were you depending upon it entirely to warm the upper floor.

Another arrangement of the combination system is to place a register and radiator in the same room. This is necessary when it has large wall and glass surface, such as large bay windows, especially if they have a north or west exposure. In a room of this description it is a good plan to place a radiator at or near the extreme end of the room. The hot air register can be placed as near the furnace as possible. Now the question will arise in your mind, "How shall I proportion the quantities? How much radiation and what size hot air pipes will be necessary to warm this room?"

Rules for Hot Air Piping.

There are approximate rules of the size of pipes necessary to warm rooms with hot air by which furnacemen are guided. These rules, coupled with a practical knowledge of the conditions upon which they may be increased in size or decreased, are as follows for rooms on the first floor: An 8-inch pipe may be used for a room containing 1200 to 1500 cubic feet of space, provided the room has not more than one wall exposed and the pipe not more than 6 or 8 feet from the furnace. If the room has two or three exposed walls a 9-inch pipe would be necessary.

A 9 inch pipe for a room containing 1500 to 1800 cubic feet under favorable conditions. The same size room under unfavorable conditions, such as large wall and glass exposure and long distance from furnace, say 12 or 15 feet, will require a 10 inch pipe.

A 10-inch pipe for a room containing about 2000 cubic feet of space with two walls exposed and hot air pipe not longer than 8 or 10 feet, but under unfavorable conditions, such as long distance from furnace and large wall and glass exposure, same size room would require a 12-inch pipe.

Applying Rules.

These examples are given to show you that it is difficult to lay down a hard and fast rule that must, under all conditions, be observed for the size pipe required to heat a given space with hot air.

We all know that there are rules given by which the quantities of air passing through a pipe of a given size can be figured out. So also can the tem-

perature of the air and its velocity be calculated. A knowledge of these rules and how to figure them out is a good thing to have, but the furnaceman who depends upon figuring out the size of pipes necessary according to these rules will get sadly astray and will probably come to the conclusion that it is not always true that figures do not lie.

I have diverged somewhat to explain why an 8, 9 or 10 inch pipe will not always heat the same size room, and will now go on to tell you how I would arrive at the sizes necessary, when hot air and hot water heat is to be used in the same room.

Both Register and Radiator.

The room to be warmed, we will suppose, is 14 feet wide, 25 feet long and 10 feet high, containing 3500 cubic feet of space; it has a bay window and faces the north; it has two walls with outside exposure and is considered a room requiring a large appropriation of heat to warm it in severe cold weather.

If the furnace has large hot air duty to perform in other parts of the house, I would use, in this case, a 10-inch pipe, and as the hot air register is only about 5 feet from the furnace, it will warm, under these circumstances, 2500 cubic feet of the space of the room. I then take the balance of the space, which is 1000 cubic feet, and for hot water allow 1 square foot of radiation for each 20 cubic feet of space, which will be 50 square feet. This may seem to you a larger ratio than is usually allowed, but when you consider that this radiator has the cold air of a bay window with a large cooling surface surrounding it, you will readily understand the wisdom of providing plenty of radiation.

The General Conclusion.

It is the general practice to warm rooms at a distance from the heater with hot water, and the inner or central rooms with hot air, excepting in cases such as described, where it may be found necessary to use hot air and hot water in the same room, or to heat the first floor of an old building with hot air and the upper floor with hot water.

Hot water heat, in combination with hot air, being more in use than is steam in the same connection, I have based my calculations upon the hot water system. When steam is used, and it is often adopted in the same connection, the work is the same as far as the general principles are concerned.

Both systems, when properly and carefully adjusted, make efficient heating plants and are well worthy of your consideration.

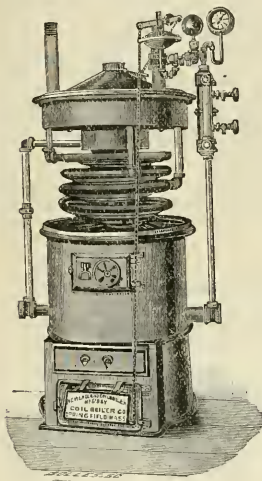
THE FRONTIER IRON WORKS, Detroit, Mich., are issuing to the trade a 12-page catalogue of their Frontier and Weber Improved hot water radiator valves and union elbows. The first page is devoted to five different reasons why the Weber valves should be used. The next two pages show sectional views of their union radiator valves, which are made in two classes, self packing and not self packing. These goods are made of steam metal and in different styles, some being used for union connection and others are made for male and female connection. Two pages show their different styles of union elbows. A sectional view is presented of their new Detroit valve, which is of the union radiator character with soft metal packing. Cuts are also shown of Weber's composition corner gate and angle gate valves. The last page is devoted to a sectional view and description of Weber's

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gate valves for steam and hot water, which are made of steam metal and in sizes from $\frac{1}{2}$ inch to 4 inches. These valves are made with either screw end or flange end.

New England and Excelsior Coil Boilers.

The illustration herewith shows the New England and Excelsior coil boilers, adapted for steam and hot water heating, and which are manufactured by the Springfield Coil Boiler Company, Springfield, Mass. The boiler consists of an upper and lower water chamber, connected by means of spiral wound coils of pipe. The coils are of pipe specially made for the purpose and said to be 25 per cent. heavier than standard and soft and flexible, so that the coils are formed without flattening the pipe or breaking it. The heaters are tested to 100 pounds hydraulic pressure before



The New England and Excelsior Coil Boilers.

leaving the factory. It is pointed out that by this construction a very large area of heating surface is exposed in proportion to the grate area. The water circulating through the boiler enters the spiral tubes at the bottom and passing through the coils is discharged into the upper chamber, and when used for steam the line of discharge is placed above the water line in the boiler. It is stated that when it is necessary to replace a coil the construction of the boiler is such that very little difficulty is experienced. Excellent opportunity for cleaning the coils is afforded by a door in the front which opens up and exposes all the piping, which is cleaned by means of a brush or by a jet of steam from the blow off when used as a steam heater. The boilers are equipped with a safety valve set to blow off at a maximum pressure of 10 pounds, also a damper regulator which will open and close the drafts at $\frac{1}{2}$ pound pressure. The boilers are made in different sizes to suit the requirements of the trade.

R. H. THOMAS, formerly manager and engineer for the Kelly & Jones Company, Chicago, has established a general steam fitting business at 16 North Canal street.

HEATING NOTES.

A PATENT has been allowed in both the United States and Canada to William H. Hallowell, Norristown, Pa., for a steam generating system for heating dwelling houses, the principal feature being a combination of a boiler with a range, either portable or brick set, the boiler being used for heating in the winter and disconnected in the summer. The heating boiler is fed with warm water from the regular range boiler.

THE CERTIFICATE of the incorporation of the Hersey-Atwood Heater Company of Clifton, N. J., has been filed at the County Clerk's office. The capital stock is \$50,000, all of which has been paid in. They will manufacture a vertical section steam and hot water boiler.

THE GOVERNOR on the engine at the works of the Standard Radiator Company, Buffalo, N. Y., was shattered by an accident resulting in a damage of \$1200, and a shut down of a few days for repairs.

A. J. CONNOR COMPANY have been incorporated at Chicago, with a capital stock of \$5000, to do a business of steam fitting and plumbing. The incorporators are Alban J. Connor, Edgar O. Stafford and John M. Van Duzen.

SECRETARY STEIN of the School Board of Grand Rapids, Mich., has been busy at work getting out a report regarding the heating apparatus and amount of coal used in the various schools of the city. Most of the 36 buildings are heated by steam heat or furnaces and only four of them still use stoves. As shown by the secretary's figures the average cost per room, regardless of the method of heating, is about \$30 a year.

H. A. R. DIETRICH, Bethlehem, Pa., the steam and hot water fitter, has added the tinsmith business to his plant and has just laid in a complete set of tools and stock of material. Under arrangements with a firm at North Wales, Montgomery County, Mr. Dietrich is turning out a large number of his patent safety boilers for house heating. The shop is now busy on orders from down East.

THE ELECTRIC BOILER COMPANY, Rochester, N. Y., are issuing a new 48-page catalogue of their Electric steam and hot water apparatus. A brief description is given of the different methods of heating and of the circulation of water. This is followed by an illustrated description of the construction and operation of their water tube boiler, which is shown both for steam and hot water heating. On page 20 an illustration is shown of their combined steam and hot water boiler, so arranged that a portion of the radiators in a heating plant may be heated by steam and others by a circulation of hot water. One page is devoted to an explanation and tables of a test of their steam boiler. Several pages are given up to tables of dimensions and ratings of the boilers for both steam and hot water and a complete telegraphic code. Many addresses of people in different sections of the United States who have used their boilers with satisfactory results are given.

THE MEMBERS of the American Society of Heating and Ventilating Engineers who are in attendance at the steam fitters' convention in Philadelphia in June are invited to meet in Room 11 Continental Hotel on June 13.

JACOB ESSIG, 35 John street, New York, makes a specialty of radiator decoration. He has been employed by the contracting steam fitters to decorate the radiators and the exposed heating mains in many of the largest heating plants that have been installed in New York City. His work can be seen in nearly all of the radiator showrooms in New York City.

F. A. SMITH of the W. H. Page Boiler Company, Norwich, Conn., is in charge of the New York office, at 61 Gold street, while Alexander Don, the manager, is making a business trip to Washington, D. C.

JOHNSON & MORRIS are issuing a card calling attention to the fact that the Street Department of New York has changed the name of South Fifth avenue to West Broadway, and that they are prepared to receive contracts for steam and hot water heating at their new address, 307-309 West Broadway.

Trade Notes.

THE POCKET PRICE-LIST of Milk Cans and Milk Can Stock issued by the Buhl Stamping Company of Detroit, Mich., has certain features of arrangement that will be highly appreciated by the trade. A series of numbers are made up in such a way that each number shows in itself what pattern and size of can the material is intended for, and also whether Can Trimmings, Can Stock or made up Can Stock are desired. By using these numbers, it is pointed out, long descriptions and consequent errors in ordering are avoided. Another new feature of the list is their cipher telegraphic code, which saves trouble and expense. The words are selected with special reference to the goods they refer to, as, for example, all the different sizes of "Baltimore" stock begin with "Ba," &c.

THE OLD DOMINION OIL CAN COMPANY have been formed at Richmond, Va., to manufacture a patent oil can. The incorporators are W. B. Saunders and R. W. Spillman of Richmond.

THE H. HALLER MFG. COMPANY, LIMITED, New Orleans, La., have established a Tinware factory, where they will carry on a manufacturing business on a considerable scale.

G. A. CROSBY & Co., 176 and 178 South Clinton street, Chicago, manufacturers of Dies, Presses and Can Makers' Machinery, have recently taken orders for nine of their large Can Soldering Machines, two of which go to England, two to Switzerland, one to Germany and the others to various parts of the United States.

J. P. LINDEMANN & SONS, Milwaukee, Wis., are sending out to the trade postal cards, on the back of which is an announcement relating to their well-known Acme Elbows. Reference is made to the Acme Corrugated, made from No. 26 patent finished black iron; the Patent Adjustable with double crimped seams; the Lindemann's No. 26, extra long, made from Wood's No. 26 smooth black iron, and also their regular grade of Elbows.

THE TOWNLEY METAL COMPANY, Kansas City, Mo., have decided to erect a warehouse 50 x 140 feet, four stories high. It will be built of pressed brick with stone trimmings and will be of slow burning construction. The cost will be about \$25,000.

PLUMBING and GAS FITTING.

Plumbers' Specialties.

The work done by plumbers may be divided into two classes with propriety. One class is constructing the water service and drainage system in buildings, and the other class is jobbing, placing new fixtures in an old system and attaching modern labor saving devices such as are being continually produced. The plumber has been called upon with a growing frequency to extend the gas service so that the cooking of the household may be done with the gas stove, and in a number of cases to attach gas grates and make arrangements so that rooms can be heated by gas used in portable stoves. Those who direct some attention to this special feature of their business have found it profitable.

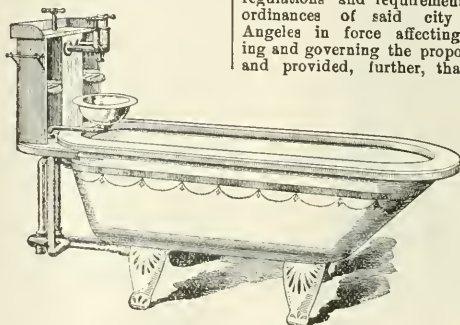
When gas is used for cooking one of the drawbacks that is never lost sight of is the lack of a large supply of hot water, such as is furnished by the kitchen boiler when a coal range is used. There are a number of devices on the market which can be connected with the gas and water service for furnishing hot water instantaneously, and which have several advantages. There is no large volume of hot water stored to heat the apartment in which the storage tank or boiler would be placed, and gas is only burned in these devices while the water is being supplied, making a very material reduction in the quantity of gas consumed and the expense of heating the water. It is probable that the enterprising plumber who thoroughly acquaints himself with these different devices and their special merits can bring them before his customers in a very telling manner. The fact that there are always people who are looking forward to something that accomplishes what they wish inexpensively and promptly is sufficient reason for the plumber to make a push on this line. At this time throughout the country buildings are not sufficiently advanced to keep the plumber employed with new work, and at the beginning of hot weather the desirability of gas cooking appliances and some method of supplying hot water in unlimited quantities will be increased by the approaching heat. The plumber will do well to show some one of these devices in his shop and to canvass among his patrons for its sale.

THE DELEGATES ELECTED by the Master Plumbers' Association of Brooklyn, N. Y., to the annual convention of the National Association are: Thomas H. Radcliffe, Edwin Hayward, Geo. B.

Lewis, H. M. Noble, O. O. Sawkins, J. J. Keenan, J. W. Kelly, M. J. Gleason, M. Fallon, L. Haff, H. L. Potter, Wm. J. Gault, Bernard McBride, Geo. W. Smythe, C. F. Mentzinger, Thomas Kelly, E. McNamara and W. E. Williams.

The Golden Crown Combination Bath and Lavatory.

The Stuart & Peterson Company, Burlington, N. J., are putting on the market a new combination bathtub and washstand which they call the Golden Crown and which is shown in the accompanying illustration. The washstand feature is adapted for use in connection with their enameled bathtubs. It stands 14 inches high and is the width of the tub, with a depth of 9 inches. It contains shelves for sponges,



The Golden Crown Combination Bath and Lavatory.

brushes and other toilet articles, and incloses the supply pipes to the basin. The basin can be supplied of either enameled cast iron or of earthenware, and is 14 inches in diameter. It rests on a swivel acting waste pipe, so that it may be swung to one side out of the way when desired. Above the basin combination compression bibbs are placed for supplying the basin, or may be used for supplying the bathtub. The bathtub is also supplied with what is known as the secret supply under the control of a special bibb. It is stated that the combination bibb is located conveniently for filling pitchers. All the valves, couplings, fittings, pipes, cabinet and basin are fitted and furnished, so that only three joints are left for the plumber to make in setting the fixtures up for use. The average shipping weight for the fixture is about 325 pounds.

A California Ordinance.

The following is a plumbing ordinance recently adopted at Los Angeles, Cal.:

That section 1 of an ordinance, entitled "An ordinance adopting rules and regulations in regard to plumbing and house drainage in the city of Los Angeles," approved February 21, 1894,

be and the same is hereby amended to read as follows:

SECTION 1. It shall be unlawful for any person or persons to commence, do, execute, construct, carry on, conduct, assume control of, alter, repair, or add to any plumbing or house drainage affecting the sanitary condition of any house or building within the corporate limits of the city of Los Angeles without first having obtained a permit in writing from the Superintendent of Buildings of said city so to do. At the time of making application for such permit the person or persons making such application shall file with the said Superintendent of Buildings a plan or drawing and description of the work proposed to be done; provided that no such permit shall be issued or granted to any person by said Superintendent of Buildings, unless the work proposed shall be in accordance with the rules, regulations and requirements of the ordinances of said city of Los Angeles in force affecting, regulating and governing the proposed work; and provided, further, that no such

permit shall be issued or granted to any person until the fees hereinafter specified and provided for shall have first been paid and deposited with said Superintendent of Buildings. Upon such application being made and the payment of the fees hereinafter provided for, and upon the approval of the plans or drawing and description of said proposed work by said superintendent, said superintendent shall issue and grant a permit in writing to the person or persons making application to do said proposed work in accordance with and subject to the ordinances of said city of Los Angeles in force, and applying to, regulating and governing the proposed work.

The fees hereinbefore referred to and to be paid and deposited with the Superintendent of Buildings, as aforesaid, are hereby fixed and established as follows:

1. When the cost of the proposed work does not exceed \$35, the permit shall be granted free of charge.
2. When the cost of the proposed work is over \$25, and does not exceed \$50, the fee shall be 25 cents.
3. When the cost of the proposed work is over \$50, and does not exceed \$500, the fee shall be 50 cents; for each additional \$500 in the cost of proposed work, or fraction thereof, the fee shall be 50 cents additional.

SEC. 2. The City Clerk shall certify to the passage of this ordinance and cause it to be published once in the *Los Angeles Evening Express*, and thereupon and thereafter it shall take effect and be in force.

Connecting Fixtures.

From A. N. S., *New York*.—I would like to know what is the most general method of connecting basins and closets to iron pipe in large cities. It is safe to make the connections without using lead where the expansion and contraction is so great as it is in cold climates?

Note.—We shall be glad to have our plumbing readers give their views on this subject, but in order that our correspondent may have some information we make the following suggestions: Where the drainage system is of the screw joint, wrought iron pipe character, it is not uncommon to connect the brass traps from basins directly into the iron pipe. There are some fittings made for waste pipes that may be calked directly into the cast iron soil pipe. The majority of water closets used in high grade plumbing are of earthen ware with trap complete in them, and, as a rule, they are connected with the pipe by means of a lead bend. Some of the hopper closets which have a cast iron base have various kinds of cast iron S traps made as a part of them, and these connect with iron pipe which runs directly to the soil pipe without serious trouble resulting. It is probable that the change of a high stack of cast iron soil pipe from its length in the winter season to the expanded length of the summer would make some trouble if the fixtures were rigidly connected with it, and under such circumstances a lead connection would certainly be of advantage.

Soldering with Cast Iron.

The plumber for all his skill in joint wiping will find his handicraft surpassed by a piece of Chinese practice in mending cracked cast iron vessels. The following account of their work is given by Dr. Ludwig Beck, an eminent authority, in his "History of Iron:—

The Chinese are exceedingly skillful in casting iron. They know how to cast astonishingly thin objects. Their pots for cooking rice in are of cast iron and are very thin. If one cracks or is burned through it is not thrown away. The traveling tinker understands how to mend these pots perfectly. First he files the crack or hole and grinds the portion smooth with a piece of a brick. Then he puts some pig iron into a crucible of the size of a tumbler. This crucible is heated in a small oven, which is 5½ inches in diameter and about as high. At the bottom is a grate through which the blast enters. When the iron is fluid he pours it on a piece of felt which he holds in his left hand, and presses the molten metal on the inside of the pot against the place to be mended. The metal which oozes out through the crack or hole is smoothed over with another piece of felt in his right hand. The felt is covered with ashes or dust. This operation he re-

peats until the pot is mended and holds water. The charge for mending a pot is 8 cents.

Local Associations.

MASSACHUSETTS PLUMBERS.

The second annual convention of the Massachusetts Association of Master Plumbers was held in New Bedford last week. William H. Mitchell of Boston, the president, called the meeting to order shortly after 11 o'clock, and after a brief address of welcome T. J. Tute of Boston was appointed sergeant-at-arms for the occasion. J. K. Tully and J. McCoolle of Boston and H. A. Desper of Worcester were appointed a Committee on Credentials. The committee reported the following as present:

Boston: T. G. Tute, D. G. Finnerty, William H. Mitchell, J. W. French, W. H. French, J. W. Coaden, E. C. Kelley, J. C. Kelley, C. M. Brownwich, H. H. Collins, J. C. McCoolle, J. S. Boyd, N. Tucker, M. Keane, P. J. Dugan, D. Horgan, W. McKenna, T. E. Dwyer, P. W. Hayes, D. F. Hurley, J. L. Connell, T. E. Sharp, H. Carruthers, A. Curtin, J. F. Davlin, J. T. Desberry, H. P. Donnell, Daniel Shannon, P. J. Hoyt, Isaac Riley, William Lumb, Edward Milla, David Craig, Thomas H. Naughton, J. K. Tully, D. F. Hurley.

New Bedford: J. W. Coggeshall, George F. Maxfield, T. J. Gifford, T. E. Mahoney, E. A. Higgins, E. F. Penney, John Ryan, John D. Elliot, D. A. Harrington, Frank C. Smith, J. W. Clifton, J. R. Denham, Charles P. Maxfield, J. H. Mahoney.

Fairhaven: R. H. Taber.

Malden: A. A. West, C. A. Driscoll, Mr. McDonald.

Revere: J. J. Lyrcome.

Springfield: J. W. Kennel.

Worcester: J. F. Deedy, J. Jordan, H. A. Desper, A. A. McLaughlin, O. S. Kendall, J. W. Greene.

Marlboro: William H. Hill.

Holyoke: C. P. Lyman.

Dorchester: T. J. Kenney.

Fall River: R. E. Fogwell, William H. Durfee.

Haverhill: A. W. Cram.

Cottage City: F. D. Tripp.

Canton: George H. Beasley.

Wakefield: Thomas E. Dwyer.

John Reagan, inspector of plumbing at Boston, was present as a guest of the association.

A resolution of thanks was adopted complimenting D. G. Finnerty of Boston for the part he had taken in defending the plumbing law. A banquet was served at noon, at which Mayor Parker and members of the New Bedford Board of Health were present and made speeches. Business was resumed in the afternoon. J. F. Davlin thought something ought to be done with the resolution extending the scope of the National Association by affiliating with the craft in Canada, and a motion that it be the sentiment of the association that such a resolution be adopted was unanimously carried.

The following officers were elected:

President, William H. Mitchell of Boston.

Vice President, J. W. Greene of Worcester.

Recording Secretary, Daniel Shannon of Boston.

Financial Secretary, C. P. Lyman of Holyoke.

Treasurer, Isaac Riley of Boston.

Executive Committee, J. F. Davlin of Somerville, O. S. Kendall of Worcester, J. W. French of Boston, T. J. Gifford

of New Bedford, and D. G. Finnerty of Boston.

Isaac Riley of Boston and R. E. Fogwell of this city were elected delegates to the National Convention.

KANSAS PLUMBERS.

The tenth annual convention of the Master Plumbers' Mutual Benefit Association of the State of Kansas was held at German League Hall, on Kansas avenue, near Third street, Topeka, last week. There were 23 of the 31 members of the association in attendance, and the time of the sessions was occupied in discussing sanitary methods and other subjects connected with the trade. The election of officers for the ensuing year resulted as follows:

President, G. W. Searles of Atchinson.

Vice-President, M. Dermody of Wichita.

Secretary, F. W. Doane of Lawrence.

Treasurer, F. H. Bowers of Emporia.

Sergeant-at-Arms, Matt. Whitson of Salina.

Delegates to National Convention, D. W. Searles, *ex officio*, F. H. Bowers of Emporia, C. J. Prescott of Topeka, James Foley of Leavenworth and James Savage of Lawrence.

Among the delegates present at the State convention were:

Atchinson: G. W. Searles and Alex S. Bowen.

Concordia: Mr. Belisle of the firm of Groesbeck & Belisle.

Emporia: F. H. Bowers.

Hutchinson: C. C. Stewart.

Lawrence: F. W. Doane and George Savage.

Leavenworth: James Foley.

Topeka: A. H. Nooney, Robt. Mood, Christian States, John Sheehan, C. J. Prescott and A. Allen.

Wichita: M. Dermody, P. H. Bertram, J. W. Green and J. A. Williams.

BALTIMORE PLUMBERS.

The annual meeting of the Master Plumbers' Association of Baltimore, Md., was held last week at the Builders' Exchange. The following officers were elected:

President, H. C. Bowman.

Vice Presidents, P. T. Barry, August Eldman, J. F. P. Carey.

Secretaries, G. W. Addison and C. H. Frederick.

Treasurer, D. N. Sullivan.

Sergeant at Arms, Michael Lots.

Directors, George Knipp, A. Stidham, P. T. Barry, T. B. Hibbits and P. A. Sullivan.

Delegates were elected to represent the Baltimore Association at the national convention, as follows: H. C. Bowman, John Trainor, J. F. Carey, G. R. Minnick, D. J. Barry, J. C. Mitchell, George Knipp, P. A. Sullivan and James Trainor.

TEXAS PLUMBERS.

The Texas State Association of Master Plumbers met at Austin last week in annual session and reviewed the association's workings for the past year. The following officers were elected for the ensuing year:

President, B. F. Sullivan of Dallas.

Vice-President, J. S. Brazelton of Waco.

Secretary, George Mummert of Dallas.

Treasurer, D. J. May of Galveston.

Sergeant-at-Arms, George A. Brush of Austin.

Executive Committee.—E. A. Thomas

of Waco, G. W. Prewitt and G. D. Ackley of Fort Worth.

Delegates selected to the national convention at Philadelphia were B. F. Sullivan of Dallas, J. M. Shumate and A. H. Shafer of San Antonio, D. G. May and Paul Shean of Galveston. W. W. Otter of Houston was selected to go before the national convention for vice-president.

There were some 75 delegates present, representing every section of the State. Among those present were: Ed. Braden, Jr., A. H. Shafer, John Bowman, Morgan & Co., J. C. Marquant, Wm. C. Shurwirth, all of San Antonio; J. F. Osborne, J. B. Austin of Askley, and Geo. W. Prewitt of Fort Worth; W. A. Burke, G. A. Brush, A. L. Teagarden and Jos. Schumate of Austin; W. W. Otter and R. B. Morris of Houston; T. J. Kirk, D. G. May, W. L. Rattislan and Paul Shean of Galveston; F. S. Brooks of Corsicana; B. Kahn, F. A. Campbell, S. C. Carroll, E. S. Davis, Geo. Mummert and D. F. Sullivan of Dallas.

The convention decided to invite the national convention to visit Texas next year. The association adjourned, to meet in Waco next May.

MAINE PLUMBERS.

The Maine State Association of Master Plumbers perfected its organization at a meeting held at Portland last week by the election of the following officers:

President, John B. Smith of Lewiston.

First Vice-President, William J. Miller of Portland.

Second Vice-President, John Witley of Gardiner.

Secretary, J. E. Chamberlain of Bangor.

Treasurer, L. W. Haskell of Auburn. *Sergeant-at-Arms*, George Getchell of Bangor.

THE INSTANTANEOUS WATER HEATING COMPANY, Chicago, with New York office at 838 Broadway, emphasize the need of ventilation by printing in red at the side of their letter heads, "It is absolutely necessary that each heater should be connected with a vent pipe terminating outside of the bathroom in which the heater is connected." The necessity of this course will be apparent when any one considers the conditions of the case. A bathroom is usually a very small apartment, and too often, especially in old houses, there are no means of ventilation except a window. During bathing this is almost always kept closed tight, and the result of a large gas flame under a hot water heater is to vitiate the air very rapidly. To support the combustion the oxygen is taken out of the air and in its place there is a large supply of carbonic acid coming out of the heater. It is reported that a young girl met her death recently in San Francisco through suffocation due this very cause, the bathroom having had an old fashioned heater in it.

THROUGH the courtesy of S. E. Dibble, we are informed that at the last special meeting of the New Haven Master Plumbers' Association the following delegates were elected to attend the national convention at Philadelphia: President F. A. Curtiss, W. H. Hazel, Wm. Keane; alternates, S. E. Dibble and Andrew J. Clerkin.

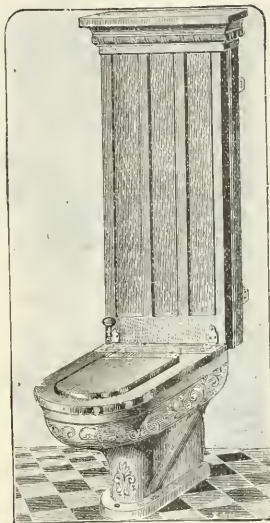
E. C. WHEELER, formerly of Dalton, has started in the plumbing business at Watertown, Mass.

The Defender Ventilating Siphon Closet.

The Newell-Booth Company, Ltd., 447-451 North Broad street, Philadelphia, are putting on the market the closet shown in the accompanying illustration.

As will be seen, no overhead tank is used, the flush being supplied from a cistern laid flat against a wall or other support, and attached directly to the bowl. The combination occupies little room, no larger space in fact than that necessary for an ordinary high backed chair. It can be set and will work perfectly, it is stated, in an alcove, or under a stairway, or may be set in the place of an old closet without additional plumbing work.

The construction is simple, there being very few working parts. The bowl is formed with two traps, the lowest trap being the deepest, and is designed particularly to facilitate ventilation and afford double security



The Defender Ventilating Siphon Closet.

against the return of foul air. By means of a ventilating ball valve located in the back of the closet the foul air is permitted to pass up into the cistern, and a similar valve allows of the air being discharged from the cistern to the soil pipe by way of a duct or passage formed in the side of the bowl and extending to and connected with the soil pipe below the traps. The flush is obtained by pressing the knob seen at the left lower edge of the cistern. While the flush is being made the lowering of the water in the tank causes a suction from the air space between the two traps, drawing the water and soil from the upper trap and the foul air from the face of the bowl. While the water and soil fall into the waste pipe below the foul air is drawn up through the ventilating valves into the upper part of the tank; then, as the tank automatically refills, the water pressure forces the foul air down, lifts the ventilating discharge valve and passes into the soil pipe. In this manner all ventilating pipes are done away with.

The cisterns are furnished in both plain and ornamental designs, and the closet, when complete, occupies a floor

space 26 x 18 inches, with an elevation of 5 feet. The cisterns and seats are handsomely finished, and are furnished in oak, walnut or cherry, or any other wood required. The makers say that the closet is not an experiment but the result of years of study, and they fully guarantee it to be what they claim.

TRAPS AND VENTS.

THE MAYOR of Milwaukee, Wis., has vetoed an ordinance which came to him with the view, it is said, of making the office of plumbing inspector subject to political influence.

C. T. LAMSON, Elizabethtown, N. J., has secured the services of T. Frank Clark and is going to do plumbing, steam and hot water and gas fitting. Mr. Lamson requests that manufacturers and dealers furnish him circulars and price-lists relating to goods for the steam, hot water and gas fitting trades.

C. A. MAYNARD has moved to his new store, 92 North Main street, Pawtucket, R. I., and will do plumbing, steam and gas fitting in all its branches.

FRANK S. KOMP, 53 Dearborn street, and Clayton & Clausen, 208 Armitage avenue, have recently started plumbing establishments in Chicago.

CHARLES T. TARPENNING, Xenia, Ohio, has recently patented a gasoline furnace in which the flames strike together in the center, thereby producing an intense heat. The arrangement of parts is such that the heat is retained within a small compass, and when the soldering tools are in place they are heated from all sides. The frame in which the burner is located is so constructed as to prevent a draft through the heating chamber, while the needle point is so protected as to prevent deflection of the gas. The burner is supported directly on the tank and the tool support is arranged at the open side of the heating chamber.

DANIEL HALLORAN has been granted a master plumber's certificate at Kingston, N. Y.

WESTERN PLUMBING SUPPLY COMPANY have been incorporated at Chicago, with a capital stock of \$3000. The incorporators are M. Naughton, George E. Marshall and C. Carpenter.

THE NEW ORDINANCE regulating the fees to be paid the city of Los Angeles, Cal., for plumbing went into effect last week. Under its provisions all permits for work for \$25 or less are issued free; work costing from \$25 to \$50 must pay a tax of 25 cents; from \$50 to \$500, 50 cents, and for work costing over \$500, 50 cents for each \$500 and fraction thereof. The total value of the cost of plumbing work for which permits were issued on the first day was \$2721.50. The permits issued numbered 13 and they paid into the city treasury the sum of \$10.50.

MICHAEL WYNNE, who recently succeeded to the plumbing and gas fitting business of James Daly, at 907 Sixth avenue, is busy at repair work.

THE plumbing and gas fitting establishment of Perry Waite, at 239 Superior street, Toledo, Ohio, has changed hands, T. Gaffney and Robt. P. O'Grady having purchased the outfit.

EAST RIVER LEAD COMPANY, 523 and 525 East Nineteenth street, New York, report a very gratifying expansion in the demand for lead pipe. Their works are now running to their fullest capacity, with a larger amount of orders on their books than for two years past.

THE TIN SHOP.

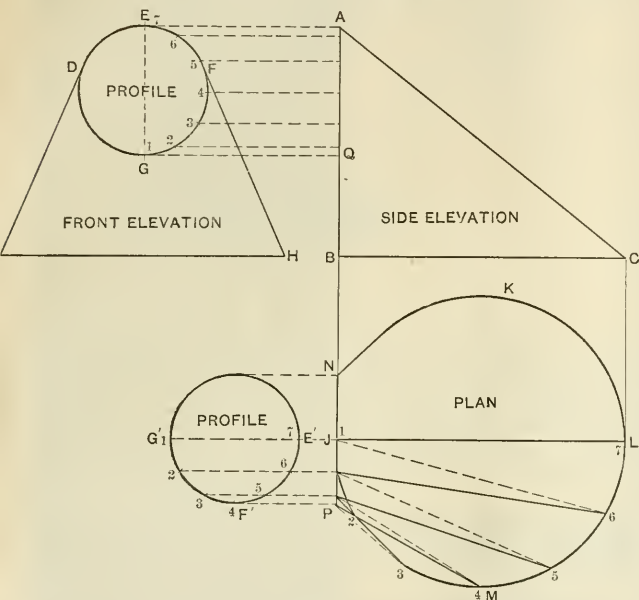
Pattern for Irregular Flaring Shape Forming a Transition from a Round Horizontal Base to a Round Top Placed Vertically.

From D. W. PHILLIPS, Baltimore, Md.—The article published in *The Metal Worker* for November 24, 1894,

method in detail. The engravings here presented are reproductions of his sketches, save that the proportions are varied to conform to those of the problem printed in *The Metal Worker* of November 24, 1894. We give a demonstration which will be readily understood by all. Referring to the

the side, below which is drawn the plan showing its circular base, J K L M. The line N P shows the plan of the opening D E F G, which opening is shown in the side view by that portion of the line A B from A to Q. Opposite the front side of the plan N P is drawn a duplicate of the profile D E F G, as shown by E' F' G', so placed that its vertical center line E' G' shall coincide with the center line of the plan, as shown. As the article consists of two symmetrical halves it will only be necessary to develop one-half the complete pattern. Therefore divide one-half of both profiles E F G and E' F' G' into the same number of equal parts, numbering each in the same order, as shown by the small figures; also divide the plan of the base into the same number of equal parts as the profile, numbering the points to correspond with the same. Drop lines from the points on the profile E' F' G' onto the line N P, at right angles to the same, as shown, and connect these points with those of similar number upon the plan of base by solid lines, as shown. Also connect points upon the base with those of the next higher number upon the line N P by dotted lines.

It will be noticed that the point J of the plan represents at once the point 1 of the base, and the points 1 and 7 of the profile, shown by B, Q and A of the side elevation. These lines drawn across the plan represent the horizontal distances between the points which they connect and will form the bases of a series of right angled triangles, whose altitudes can be derived from the elevations, as will be shown, and whose hypotenuses, when drawn, will give the true distances between points of corresponding number across the finished article or its pattern. To obtain the



Pattern for an Irregular Flaring Shape Forming a Transition from a Round Horizontal Base to a Round Top Placed Vertically.—Fig. 1.—Front and Side Elevations, Profile and Plan of Article.

in answer to the request of "H. J. S.," Appleton, Wis., is not what you or he intended it. In other words, if the directions are followed with the diagrams as a guide there cannot be developed a pattern for the shape intended. I send some drawings which I shall be glad to have published for the benefit of the subscribers of the paper who have asked me to put them straight on this thing.

Note.—Our correspondent is assuming too much when he intimates that the article published in our issue for November 24 is not what we intended it to be. We take this opportunity of stating that the solution of the problem there given is correct in all respects, although it may be a little too complicated for ready comprehension, hence the perplexity of our correspondent. The sketches which he sends show a solution of the problem by a simpler method than that published, but he fails to furnish a demonstration of the

illustrations, let I D E F H represent the front elevation of the article, showing the circular opening D E F G form-

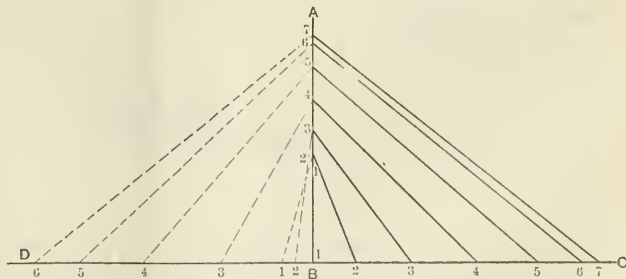


Fig. 2.—Diagram of Triangles.

ing its upper perimeter or profile. The triangle A B C shows the shape of the article as it appears when viewed from

altitudes of the triangles carry lines from the points in the half profile E F G horizontally across, cutting the

line A Q, as shown; then the distances of the points in A Q from B will constitute the respective altitudes of the triangles. Therefore, to construct a diagram of all the triangles, draw any horizontal line, as B C, Fig. 2, near the center of which erect a perpendicular, B A. Upon B A set off from B the various distances from B to points in A Q of Fig. 1, numbering the same as shown by the small figures. From B set off on B C the lengths of the various solid lines drawn across the plan, Fig. 1, and connect points in B C with those of like number in B A. From B set off toward D the lengths of the various dotted lines drawn across the plan in Fig. 1 and connect them by

Fig. 3 as center, with a radius equal to 7 6 of the profile, Fig. 1, describe a small arc, which intersect with another struck from point 6 of pattern as center, with a radius equal to the solid line 6 6 of Fig. 2, thus locating the position of the point 6' of the pattern.

So continue to use the spaces of the plan, the lengths, the dotted lines of the diagram of triangles, the spaces in the profile and the lengths of the solid lines of the diagram of triangles in the order named until all have been used and the pattern is complete. Lines traced through the numbered points obtained as shown from C to B and from A to Q will form the outlines of the pattern for half the article. The other

above pipe laying was all that called workmen out of the shop. Tools and machines have not greatly changed, the "must haves" being for turning, wiring, burring, folding and grooving. The old folder had two levers, a horizontal and a vertical; the first was lifted by the left hand and the tin pushed up to gauge by the right hand. Dropping the same lever made part of the fold and it was completed by two movements of the vertical lever with the right hand.

The stakes have retained their old names, which in some cases are now misnomers; the blow horn stake is common, but the old tin horn, without a reed, has departed; the needle case stake has also changed its business, the use of the creasing stake has a good deal decreased, and the hand swage is superannuated. The raising block, with its peculiar hammers, was indispensable, for every concave article was raised by repeated blows of the round faced hammer in a suitable cavity. Everything was cut with the bench shears. "Snips," so called, were little used at the bench. Hammers and mallets were as now. Among the tin fabrics of former time which have now gone into "innocuous desuetude" were whistles, formed of two small disks with central holes and connected by a narrow band; these, with $\frac{1}{2}$ pint cups, were the cause of many burned fingers in the apprentices' first lessons in soldering. Needle cases for holding the slender steel rods on which grandmothers used to build up stockings, are only relics with the present woman, for she knits not hosiery, neither does she spin. The round tin lantern with its conical top, which was hand punched with fanciful apertures to let the candle light strain through, has gone out, or may still live in economical households as a horse-radish grater. Candle molds, pepper boxes, molasses cups, with other ware of the old time shop, are now "down among the dead men."

I will take as a specimen of the work of our ancestors the making of a tea kettle. The body, spout and handle were marked out by a pattern, the top and cover also scribed on the flat sheet with compasses. The copper pit, deeper then than now, was a pieced pan whose flange was formed with the hammer and mallet; wash boiler pits, which were twins of the kettle family, were also thus made. Our tea kettle next went through the various stages of cutting out, raising the top and cover, forming, double seaming and soldering. The forming or shaping of many cylindrical vessels was done on tapering or straight wooden logs upon which the workman sat astride. Spouts and handles were formed on the blow horn stake. Ears were made on the creasing stake, and I may say that every component of tinware, except perhaps the rivets, was made in the shop, for trimmings were not to be bought. There was a home-made former for stove pipe of two wood rolls, in which by the use of a lever and mallet it could be partly shaped and the lock turned. After the lock was closed on a mandrel the pipe went to the beak horn stake, where by holding the seam parallel and close to the edge of the stake it was grooved without a groover and left smooth on the outside. I have not space for the old shop lore that comes to mind, and my contemporary fossils might add to the interest no doubt, but this "looking backward" may serve to show the operations of the former metal worker, and possibly help his successors to appreciate their modern improvements.

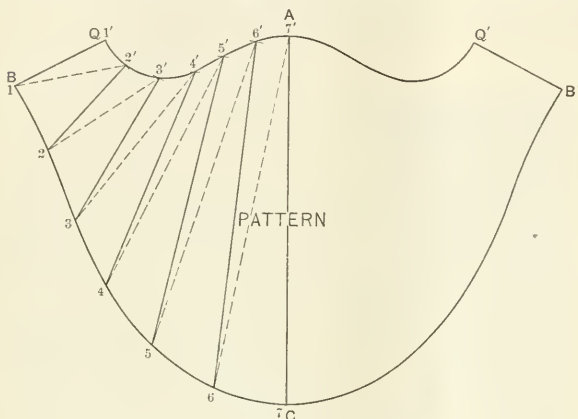


Fig. 3.—Pattern of Article.

dotted lines with points of the next higher number in the line B A, all as shown; then these various hypotenuses will constitute the true distances across the finished article between points of corresponding number indicated on the plan and elevations. The distances between points in the base line forming the larger or outer curve of the pattern can be measured from the base line in plan, while spaces forming the upper or shorter side of pattern can be measured from either of the profiles.

To develop the pattern it is simply necessary to construct the various triangles whose dimensions have been obtained in the previous operations, beginning at either end most convenient and using the dimensions in the order in which they occur until all have been used and the pattern is complete.

Therefore, upon any straight line, as A C of Fig. 3, set off a distance equal to A C of Figs. 1 and 2 or the solid line 7 7 of Fig. 2. From C as a center, with a radius equal to 7 6 of the plan, Fig. 1, describe a small arc to the left, which intersect with another small arc struck from A as a center and with a radius equal to the dotted line 7 6 of the diagram of triangles, Fig. 2, thus establishing the position of the point 6 of the pattern. From A of

half, A Q' B' C, can be obtained by any means of duplication most convenient.

A Country Tin Shop Fifty Years Ago.

BY FOSSIL.

Probably there are some now in the trade who will recognize the pen picture which I will attempt to make and compare it—perhaps unfavorably—with their own experience, but as this writing is intended for those of a later generation who may like to contrast the then and now, any comments or criticisms which it incites may be interesting. A suburban tin shop in the forties was just what its name implies, for but little other material was used or product made except that which came under the general term tinware. Sheet copper, brass, zinc and iron (not galvanized), English and Russia, were to be had—American was not then much, if any, in the market. Nearly all the shop output was utensils for domestic use, some of which are now obsolete. An occasional job of roofing was done with 10 x 14 bright plates. Also in the locality where the shop I describe was situated there were various things for cotton mill work to be made to order. There were, to be sure, such outside jobs as the laying of lead pipe for water supply, with its accompaniments. This was not called plumbing, and wiped joints were almost unknown. The putting up of gutters and leaders with

Goulds' Electric Triplex Pump and Belt Tightener.

In modern pumping operations electricity has come to play an important part and pumps electrically operated are now a common sight. Such an installation is simple in operation and practically automatic. It is not at-

and which is adjusted by a set screw with lever handle. This pumping outfit is designed for use in dwellings, business blocks and country houses, while the larger sizes are employed for all kinds of pumping service.

A dispatch from Shanghai, China, asserts that one advantage which may be gained as a consequence of the late

Out-Ferrising Ferris.

In the mammoth Watkin Tower, now being constructed at Wembley Park, a suburb of London, the English propose to place in the shade the wonderful structure of Eiffel, in Paris. Similarly they have just "gone one better" in the matter of "Ferris wheels." For several months past there has been rising in the exhibition grounds at Earl's Court, near London, a steel structure 300 feet high. This is a gigantic wheel, which is an enlargement on and a modification of the wheel which attracted so much attention at the Columbian Exposition. The English structure, which was opened to the public this week, is the largest thing of its kind ever built, the axle being carried on eight supporting columns 150 feet high, at which level there are two promenades, or recreation roads, communicating with each other by a passageway through the axle 7 feet in diameter. Around the periphery are suspended at intervals on steel shafts, 40 cars, 24 feet long by 9 feet wide and 10 feet high, each car being capable of carrying 36 passengers. Ten of these cars have been elegantly furnished and form first-class cars, the remaining 30 being finished in a plainer style. As the wheel revolves, passengers are able to obtain, in clear weather, a magnificent view of London and the surrounding country. Access to the promenade at the top of the columns forming the towers which carry the wheel is gained by a double funicular railway, or water balanced elevators. At night the wheel is lighted by electricity. The total weight of the wheel and cars is about 1500 tons. The wheel was planned by Lieut. J. W. Graydon and built by Walter B. Basset.

The subordinate bodies of the Iron Molders' International Union have decided to hold a convention in Chicago,

tended with any noise or dirt; it requires no skilled attendance and may be employed in many instances where the use of other motive power would be undesirable. One of the most important features of such an equipment is the fact that the moment it is shut down the expense of operating ceases, and the motor and pump may be run continuously or intermittently, as may be desired. The subjects of the illustrations are Goulds' triplex power pumps operated by an electric motor, and a pump and motor mounted on one base, together with a belt tightener. The pump is the well-known triplex pattern built by the Goulds Mfg. Company of Seneca Falls, N. Y. The principle on which the pump is built is that a constant flow and consequent high efficiency are produced by the constant action of parts. As will be seen by the cuts, this style of pump has three plungers set at 120° on the crank and which by their following and overlapping produce a constant and uniform flow of the liquid pumped. Fig. 1, as ordinarily built, has three single-acting plungers and connecting rods, to which the plungers are attached by means of cross heads which sustain the side thrust of the connecting rods and permit the plungers to operate without lateral pressure. The plungers are outside packed and have water seal. The valves are rubber disks with bronze trimmings and seats.

Both the engravings, Figs. 1 and 2, show the arrangement for driving these pumps by electric motor. Fig. 2 illustrates the Goulds belt tightener, which is intended for use where pump and motor are in close proximity and which prevents the belt slipping, and thereby insures the satisfactory operation of the pumps. It consists of an arm with hinged extension, the former being belted securely to the frame of the pump. The arm carries an idler pulley which is flanged to prevent the belt running off

war is the opening up of the natural mineral wealth of China. The coal famine, which was caused by the war, has caused a careful prospecting of the country for signs of coal, with the result that beds of good bituminous coal, easily workable, are said to have been discovered on the Yangtze River. Ap-

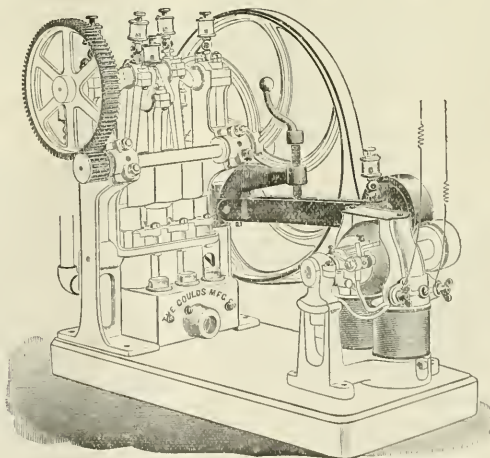


Fig. 2.—Goulds' Pump Belt Tightener.

plication has been made for a concession to work the mines, and it is hoped that before long the industry will be in full swing. It is believed that if the coal deposits on the upper Yangtze are successfully worked it will be a step toward opening up the rich mines of coal, silver and other minerals which are known to exist not far from that neighborhood.

opening on July 8. As this will be the first convention of this body that has been held in four years, much interest is felt in it by the workmen.

The Henry McShane Mfg. Company, Baltimore, Md., employing about 1000 men, have advanced wages 10 per cent.

TIN PLATES.

Domestic Tin Plate Works Busy.

In line with the steady improvement which has developed in the condition of general business throughout the country, the demand for tin andterne plates, after a spell of depression extending over nearly two years, has begun to show a very gratifying expansion. Reports from all quarters indicate that the requirements of consumers are growing week by week, and this improvement is fully reflected in the great degree of activity which now prevails among the American tin plate works. Most of the large plants in the Western, Ohio and Pittsburgh districts are reported as running to their limit of capacity to fill the orders on their books, and several of them are referred to as being behind their orders. The fact that so many of their Welsh competitors have lately been forced either to shut down altogether or to reduce the extent of their output gives the American manufacturers the opportunity of placing their material on the market under the most favorable circumstances. Stocks of foreign plates have run very low, and in some lines are almost unobtainable just now.

The lack is being filled by plates manufactured in this country, and it is confidently expected by the domestic makers that once consumers, hitherto accustomed to use only the imported material, have been able to make a thorough test of the American plates in actual service, and having compared them with the Welsh product, they will not readily revert to their old love. The price of American plates has been brought down to very nearly, if not quite, the level of imported brands of the same quality, and the advantages offered by the former in the way of ready shipment, freshness of stock and the facility of returning damaged goods or any not found up to standard cannot fail to be duly appreciated by the consuming public. The fact that the standard of American made plates has been generally maintained hitherto at a high level of excellence holds promise that the expectations of their steady growth in favor will not be disappointed, provided the keen competition which is more than likely to occur before very long in this as in all other lines of iron and steel manufacture does not bring about deterioration in the quality.

The marvelous growth of the American tin plate manufacture in less than four years presents one of the most re-

markable instances of industrial effort in history. From nothing, it has become an established industry of large proportions, which already gives employment to some 15,000 hands. At the present moment, so far as can be gathered from the latest reports, there are in actual operation 28 tin plate works proper, rolling their own black plates. Ten more are building, two or three of which are practically complete and ready to start up, while the majority of the other are expected to be in operation by July 1. These works possess an aggregate of 155 mills completed or building, of which about 110 are now in active work. In addition to these works there are no less than 30 plants now actively employed where black plates, purchased from American mills, are dipped and finished for the market. Five other works of a similar character are idle and two new ones are building, some of these "dipperies" representing a very large capacity of production. Already the possible output of all the tin plate works in the United States nearly approaches the average total consumption of the country, exclusive of that portion, amounting to from 1,200,000 to 1,500,000 boxes per annum, on which a drawback of duty is allowed for re-export, or which, like the Pacific Coast trade, cannot yet be touched by the home manufacturers on account of freight.

Meeting of Sheet Manufacturers.

The regular monthly meeting of the Iron and Steel Sheet Manufacturers' Association was held in the Conestoga Building, Pittsburgh, on Tuesday, the 21st inst. J. G. Battelle of the Piqua Rolling Mill Company of Piqua, Ohio, was in the chair and John Jarrett was secretary. After routine business had been disposed of the wage question came up and was under discussion for considerable time. It is generally expected by the members that the Amalgamated Association will ask an advance in wages of not less than 10 per cent., to go into effect on the expiration of the present scale on June 30. It will be remembered that when the Amalgamated Association reduced the base price of bar iron from 2 cents to 1½ cents it carried with it a reduction of 10 per cent. in the sheet scale. It is more than likely that the employees will demand that this 10 per cent. be restored, and, if such is the case, it is certain that the advance will be refused. It can be authoritatively stated that the sheet manufacturers will agree to sign the present scale for another year, only asking the same slight modifications in the foot notes. A number of concerns who are members of the Iron and Steel Sheet Manufacturers' Association are

also members of the Tinned Plate Manufacturers' Association, and on Thursday evening an informal conference of the representatives of these concerns was held in the Monongahela House, Pittsburgh. The wage question was gone over pretty thoroughly, but nothing definite was done, or can be done, until the result of the convention of the Amalgamated Association, now in session at Cleveland, Ohio, is known. It will be remembered that on October 1 of last year the tin plate manufacturers asked a reduction of 30 per cent. in rollers' wages, 25 per cent. in heaters' and 20 per cent. to shearmen and doublers. The men refused to accept the reduction and, after a strike lasting several months, the trouble was ended by the Amalgamated Association agreeing to accept a reduction of 15 per cent. in rollers' wages and 12½ per cent. in heaters'. It is believed that the tin plate manufacturers will be asked to restore this reduction, and if they are the request will undoubtedly be refused. A meeting of the Iron and Steel Sheet Manufacturers' Association and the Tinned Plate Manufacturers' Association will be held immediately after the adjournment of the convention of the Amalgamated Association, or as soon as it is known whether any advance in wages in sheet and tin plate mills will be demanded.

SCRAP.

THE *Western Mail* of Cardiff, Wales, has been inquiring into the condition and prospects of the tin plate trade in that country. From its reports, gathered at the close of last month, it appears that in the Pontardulais district there were 21 mills idle, 24 working at a 10 per cent. reduction in the wages, and 8 at a 12½ per cent. reduction. In the Morriston and Swansea district 25 were idle, 10 working at 10 per cent. and 50 at 12½ per cent. reduction. In the Swansea Valley one works—Gilbertson's—was working full time without any reduction. In that district there were 22 mills idle, 7 working at 10 per cent. and 13 at 12½ per cent. reduction. It is suggested by the English trade press that other Welsh tin plate makers might with advantage study the causes which enable Mr. Gilbertson to go on while they are obliged to stop, especially as there is a constant stream of tin plate makers leaving for the United States every week.

RECENT ADVICES from England intimate that the men at one Welsh tin plate works near Swansea have accepted a reduction of 25 per cent. in their wages. It is believed that this circumstance may lead to further strikes and lock outs, as other makers will expect the same concession from their workmen, and this is not likely to be conceded without a struggle.

UP TO THE WEEK ENDING MAY 15 the imports of tin plates at the port of New York had reached 641,293 boxes, as compared with 556,714 boxes in the same period of 1894. The condition of the trade at the beginning of last year was, however, extremely depressed, as

the figures there given are but a little over 60 per cent. of the importations in the same period of 1893 and 1892. As compared with the last ten years the importations of tin plates at this port during the current year are the smallest, with the exception of last year.

F. R. PHILLIPS, Philadelphia, has been awarded the contract to equip and start up the new tin plate plant which the Nivins & Hassard Tin Plate Company are constructing at Thirteenth and Washington avenues, Philadelphia. The initial equipment will embrace three Phillips machines, of the latest pattern, additional stacks being provided for five more sets. Mr. Phillips has recently shipped the first of his machines, through the Totten & Hogg Iron & Steel Company, Pittsburgh, to the Laughlin Nail Company's new plant at Martin's Ferry, Ohio. Several other machines will follow in quick succession.

PHILLIPS TIN PLATE COMPANY, Philadelphia, report that they are rushed with orders, sufficient to run their five sets full through the month of June. The company are making extensive alterations, with the view to facilitate the handling of the raw and finished material. They have recently constructed a new siding, under cover, so that the black plate can be conveniently unloaded direct from the cars, in close proximity to the pickling room, while finished plates can be loaded on the cars, under cover, from the assorting room, thus enabling them to handle their product more quickly and facilitating prompt shipments.

The tin plate plant of the La Belle Iron Works, Richmond, Va., is nearly ready to commence operation. The rolls and furnaces are completed and in place, and the rolling of black sheets will begin within a day or two. It is reported that the plant will commence operations with ample orders on their books to keep them busy for some time to come.

OUT OF A TOTAL of 515 tin plate mills in Great Britain 225 were entirely idle at the end of April, while the larger proportion of those in operation were not running full.

SHIPMENTS of black plates from Great Britain to the United States in the month of April, according to the Board of Trade returns, amounted to 1180 tons, as compared with 39 tons during March. The total shipments of black plates to this country during the current year have amounted to 3947 tons.

IMPORTS of pig tin into Great Britain during the first four months of this year show a decline in quantity of about 2000 tons, and in value of \$1,200,000, as compared with the totals for the first four months of last year.

A LOCAL JOURNAL of Akron, Ohio, states that a company are desirous of locating a tin plate mill in that city.

THE STANDARD TIN PLATE COMPANY of Chicago, Ill., have filed articles of incorporation, with a capital stock of \$200,000, the incorporators being W. G. Burtley, L. C. Welton and Charles E. Davis.

WE ARE ADVISED that the report that the Goff Steel Company, Limited, Pittsburgh, Pa., would erect a tin plate plant at Mendelssohn, Pa., is without foundation. The concern has no thought whatever of going into this branch of business, and never even discussed it. Their specialty is light galvanized hoops and bands for all pur-

poses extra hoops and bands are used. They have a fair share of orders, and from present indications will be able to run their plant full time during the summer.

A PAGE in the new catalogue of the Simmons Hardware Company, St. Louis, Mo., is devoted to a recent department made by the firm. It comprises the brands of American tin andterne plates manufactured especially for this concern. They include Laclede, a high grade charcoal redipped plate of Melyn grade; De Soto, a bright charcoal plate of Grange grade; Ozark, a bright coke plate of J. B. grade; Jupiter, an old process extra heavy coatedterne plate of M. F. grade; Delmar, a charcoalterne of Worcester grade, and Economy, an ordinaryterne of J. G. grade. The Simmons Hardware Company state that all these plates are made of Bessemer steel and are of the highest quality obtainable. They claim that in actual practice their plates have been found superior to imported material of similar grade.

JOHN HAMILTON, Pittsburgh, Pa., manufacturer of Hamilton's Best Redipped American roofing tin, reports an increasing demand for this product, of which shipments are being made to all parts of the country. This is a high grade roofing plate and only the very best materials are used in its manufacture, and in consequence it cannot, it is said, be sold in competition with cheaper grades of roofing tin on the market. Some very flattering testimonials from users of this brand have been received by Mr. Hamilton and he requests the trade to send for samples, which will be sent upon application.

WORK is actively progressing on the new tin plate plant of the Stickney Iron Company, Baltimore, Md., of whom George H. Stickney is president and William Harvey secretary.

MCLIVAIN, CRATER & HIGH, Reading Tin Plate Works, Reading, Pa., advise us that as they have discovered that the name "Victor," which they adopted for one of their brands, is already in use by another concern, they have discontinued the use of it and have substituted the term "A1" in its stead.

THE NIVIN & HASSARD TIN PLATE COMPANY, LIMITED, is the name of a new concern commencing the manufacture of tin andterne plates at 1313 and 1315 Washington avenue, Philadelphia. They have purchased a lot 40 x 113, and have erected a brick building thereon, 26 x 70, in which are installed three Phillips-Newbold tinning stacks. The building is well lighted, and arranged to accommodate about six stacks, provision having been made for perfect ventilation. The entire equipment is an embodiment of the latest and most modern ideas in the way of tin plate machinery. The office building is separate from the main building and contains two rooms. E. F. Nivin, the president, and S. D. Hassard, the secretary and treasurer of the company, have had many years experience in the tin plate trade, the former having been for 33 years and the latter for 16 years connected with the well-known Philadelphia firm of tin plate merchants and manufacturers, Nathan Trotter & Co. L. B. Walters, also connected with the new company, is well and favorably known to the trade. The company will introduce six brands ofterne and two brands of charcoal brights, as follows: Nivin & Hassard New Method, triple coated, a high grade roofing plate; N. & H. Roofing, double coated, a plate

somewhat lower in price; Trilby, heavy coated, a medium roofing plate; Sensation, single dipped, heavy coated, a cheaper grade; Echo, Worcester grade; Dandy, brightterne, and Jewel and Rambler, charcoal brights. The company state that it will be their aim to produce good, honest plates, and that their manufacturing methods will allow of such a production at the lowest prices consistent with the market cost of the materials.

THE general atmosphere of bustle and the jam of freight wagons loading or unloading in the region between Cliff and Water streets, New York City, give one the impression that things are at last beginning to hum in the tin plate and metal trades. This impression is deepened into conviction on inquiry at the offices of the leading dealers and jobbers, where business reigns supreme. The contrast to the condition of things there a few months ago is gratifying and encouraging. Even the "croakers" cease from croaking these days, and the most hardened pessimists are fain to acknowledge that business is "a little better."

Bad times are being experienced by the New York State canal men this year. Since the Erie Canal opened for the season of 1895, only 260 boats have cleared from Buffalo for the East, as compared with 445 for the corresponding period of last year, and every one of these boats is believed to have traveled at a loss. The prospects for the canal men is not encouraging. Grain rates are from 14 to 2 cents, and it is generally understood that no profit can be had in carrying grain at less than 3 cents.

United States Consul General Jernigan, at Shanghai, in a report to the State Department, mentions a considerable falling off in the importations of cotton goods from the United States and Great Britain into the Chinese Empire in recent years, due to the increasing manufacture of cotton cloth by China and Japan and the low price of skilled labor in those countries which enables the mills to turn out their product at less cost than it can be done abroad.

The United States Circuit Court of Appeals, at Boston, on Saturday, handed down a decision in the Bell Telephone case, declaring the Berliner patent on the telephonic transmitter valid. This reverses the ruling of Judge Carpenter of the Circuit Court, given last December, which declared the Berliner patent, held by the Bell Company, to be invalid and ordered it to be given up for cancellation. By the present decision the Bell Company will virtually possess a monopoly of the microphone until 1908.

Statistics of foreign trade, issued in the monthly statement of the Bureau of Statistics for April, again show an excess of imports over exports. The excess in April amounts to \$3,348,363; and the excess for the three months of February, March and April combined is \$9,815,324. Exports for the month show a slight increase over those of April, 1894, while imports have increased nearly \$10,000,000 as compared with that month. For the ten months ended April 30 the balance of exports over imports, including gold and silver, amounted to \$142,856,000. For the same months of the preceding year the excess was \$217,984,000.

Range and Safe Makers' Open End Hand Brake.

The illustrations presented herewith show a new and improved open end hand brake. The cuts, which were made from photographs of the machine

to the sliding portion of the top clamp for the purpose of adjusting the top clamp, bending edge back from the bending edge of the bending bar. This enables the operator to produce round corners on material when required. In addition to the kind of work mentioned, the brake will do all ordinary bending

Discover as accurately as possible the want that exists or the particular object that is to be obtained. 2. Be well acquainted with the scientific principles involved. 3. Know how the want is met or the object obtained in practical life. 4. Find out what proposals have been made by others in the same or in a similar case." A careful attention to these requirements would prevent much disappointment and waste of energy on the part of inventors.

A French chemist is reported to have obtained a new substance, somewhat resembling ordinary porcelain, by the manipulation of asbestos. The fibers of asbestos are exceedingly fine, and give an almost impalpable powder. From this powder a paste is made by the mixture of water, which is thoroughly kneaded and molded into the desired form. By heating the article in a crucible to a temperature of 2400° F., a porcelain is obtained with a translucency comparable to that of ordinary porcelain. An electrical expert who has employed porous cups of this substance says that they have much less resistance to the electrical current than the ordinary cups in use.

The Secretary of the Navy has advertised for bids for the supply of about \$35,000 worth of seamless drawn brass pipe, valves, fittings, pipe covering, sheet brass, &c., for the Mare Island Navy Yard, Philadelphia.

President J. J. Hill of the Great Northern Railroad lately announced that numbers of workmen in the Western cities are seeking information regarding the opportunities of securing farms, and as a result there is a steady emigration of these people into the yet unsettled portions of the Northwest. The officials of the Atchison Railroad say,

of No. 14 gauge and lighter iron or soft steel.

"Business revival is here," says the *Boston Transcript*, "and daily grows more pronounced. But it is a sign deserving particular notice and also the consideration of the student of economics, that instead of wages being the last to experience the benefits of re

in two positions, illustrate it closed in Fig. 1 and opened in Fig. 2, after the formation and for the removal of a four sided figure, which is shown below in the illustrations. The brake was specially designed by J. M. Robinson & Co. of Cincinnati, Ohio, to meet the demand for a brake with which to form and complete a four-sided open end figure around the clamp without extra changing until the completion of the fourth and last bend, when it can then be removed without marring or disfiguring. The top clamp of the brake is supported on standards, one end being pivoted to the standard, which allows it to swing open by releasing the bolt at the opposite end, which is held in place by a wing nut and swings down on its axle. This frees the top clamp and allows it to swing open, when the formed work can be removed. The position of the brake when open is illustrated in Fig. 2. In Fig. 1 the brake is closed ready to clamp the material. The sheet to be bent is inserted between the clamps and then the handle shown at the right hand is pulled forward. This causes the eccentrics, one of which is shown under each end of the bottom clamp, to raise the clamp and secure the sheet for the first bend, which is completed by pulling upward on the two handles secured on the bending bar, on which the name "J. M. Robinson & Co." appears. All the handles are then returned to their first position and the material is free to be moved for the next bend. The operation is then repeated and continued until the four sides are completed, when by releasing the top clamp and swinging it open the work can be removed. The movement of the top clamp is only necessary when boxed ovens or figures of four sides are to be bent. For flanged pans or other flanged work grooves are placed in the top clamp and bending bar deep enough to admit the flanged work. For bending round cornered figures, screws are provided and secured

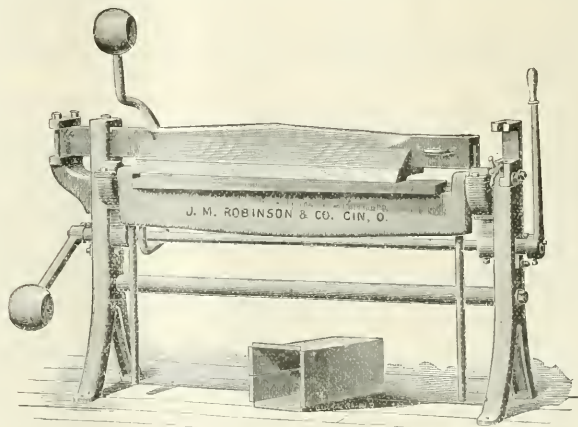


Fig. 2.—Brake Open for Removal of Material.

covery they have begun to rise coincidently with the beginning of trade revival."

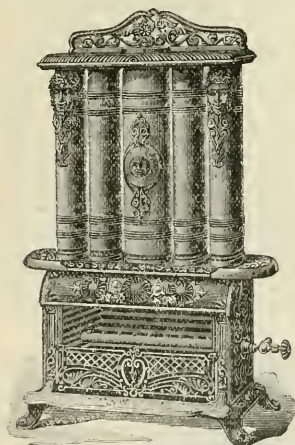
In his "Advice to Inventors," recently published, A. Siemens, the well-known scientist, lays down the following appropriate and timely rules for the guidance of would be inventors: "1.

also, that there is a marked increase in the leasing of farms on the lines of their system. In fact, the movement toward the country in the West seems to be reaching quite remarkable proportions. The men argue that while they may not be able to get rich in cultivating the soil, they can at least count on supporting themselves there in a decent manner.

THE RETAIL STORE.

A Novel Gas Heater.

Among the recent additions to the extensive assortment of gas burning appliances manufactured by F. & L. Kahn & Brothers, Hamilton, Ohio, is a device for heating purposes which is being offered the trade under the name Triple Effect. The essential features embodied in this construction are covered by letters patent granted a few weeks ago. A general view of the device is shown in Fig. 1 of the accompanying illustrations, while Fig. 2 represents a vertical cross section showing the internal arrangement of parts. It will be seen from an inspection of the latter engraving that the body or base of the heater consists of two vertical flues open at the bottom and forming end walls for an open front chamber in which is located the gas burner. Over the burner is a horizontal cross pipe which connects the tops of the two flues, there being a passage at the front and rear of the cross pipe for the movement of the products of combustion. From the top of the stove body and communicating with the combustion



A Novel Gas Heater.—Fig. 1.—General View of Triple Effect Heater.

chamber are a series of flues which furnish the radiating surface. In the center is a vertical flue which communicates at its lower end with the cross pipe already referred to. An ornamental hollow top surmounts the flues, its interior cavity being in communication with the tops of the flues at the right and left of the center. At the top of the center flue is a pipe collar for connection with the chimney. In operation the gas heats the side flues as well as the cross pipe shown in the sectional view. Fresh air enters the lower ends of the flues forming the sides of the combustion chamber and becoming heated in its upward passage flows into the vertical tubes or radiators and from them into the room at a high temperature. The products of combustion and air which has entered the fire place or

combustion chamber pass around the cross pipe and up through the side flues to the hollow top and thence escape to the chimney. The manufacturers call this heater the Triple Effect because it combines in one three systems of heating—namely, by radiation, reflection

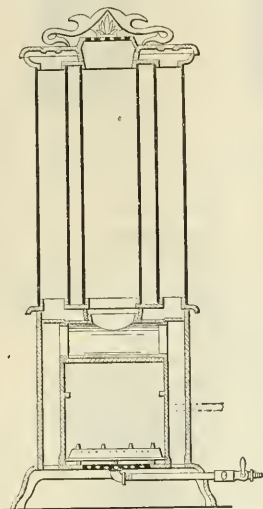
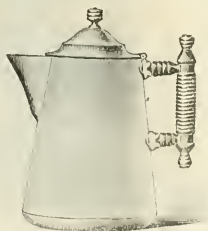


Fig. 2.—Vertical Cross Section, Showing Internal Arrangement of Parts.

tion and air circulation. The Triple Effect is made in two sizes and three styles, all having burners giving a powerful and uniform heat with an adjustable air mixer and valve.

The Erie Cast Aluminum Coffee Pot.

The trade will be interested in a new article in aluminum, brought out by the Griswold Mfg. Company, Erie, Pa.



The Erie Cast Aluminum Coffee Pot.

It is the Erie cast aluminum coffee pot, a general view of which is shown in the accompanying illustration. A special feature of the pot is that it is cast all in one piece, including the spout and the strainer in the inside of the spout. The hinges are cast on the pot and cover respectively, and milled out by machinery and drilled so as to make a tight fit. The handle is riveted on by aluminum

rivets, which are cast on the outside of the pot. This feature of construction is particularly alluded to, for by this plan, it is pointed out, there are no defects on the inside due to rivet heads. The inside is polished clean and smooth and the outside polished to a high luster resembling silver. The advantage of a pot without seams will be readily appreciated. These pots are made in three sizes, holding 2, 3 and 4 quarts, and the Griswold Mfg. Company are now ready to ship them in sample orders or in lots.

MEMORANDA.

THE FOLDING BATH TUB COMPANY of Marshall, Mich., are distributing among the trade a 16 page catalogue of their goods. The first six pages are devoted to illustrations and description of their folding bathtub, shown ready for operation and also closed. When not in use some show a beveled French plate mirror and handsome panel wood work, while others are less pretentious and less expensive. Two pages are devoted to their sanitary bath chair, which enables a Turkish or medicated vapor bath to be taken in the residence of the owner. One page is devoted to showing and describing their improved bath heater, which, it is claimed, will warm 20 gallons of water in about 20 minutes. Another of their bathroom fixtures is a hamper for soiled clothing that is in the shape of a piece of furniture and very neat in appearance, the front being hinged at the bottom, thus enabling the top of the hamper to be swung out for inserting or removing articles of apparel. Another page is devoted to their Kitchen Pride cabinet. In the top is a drawer with two large compartments and one for rolling pins, spoons, knives, &c., and eight smaller compartments for salt and spices. Beneath the drawer is a large kneading board, which is removable and which can be placed on the top of the cabinet for mixing bread, pies and cake. Beneath the kneading board is a large flour bin, hinged at the bottom and swinging out at the top, which has capacity for holding about 100 pounds of flour. Loose circulars accompanying the catalogue show a new combination commode, deodorizer and slop jar and a new folding bath that is made entirely of zinc. Another circular shows what they call an "all round compartment," which is firmly supported on uprights and contains ten white maple compartments, 10 x 12 inches in size and 5 inches deep, suitable for displaying garden seeds and small articles of household hardware and tools.

HARRIS & CHAPIN, Oskfield, N. Y., whose retail Hardware business was completely destroyed by fire on the 11th inst., advise us that this misfortune did not in any way affect their manufacturing interests. They accordingly solicit a continuance of the favor of the trade and are prepared to give prompt attention to orders for Red Bank Oil Cans, Eclipse Cabinet Gasoline Tanks, Red Band Gasoline Tanks, Pump and Storage Tanks, Shipping Cans, &c.

Smith's Nested Stove Pipe.

The illustrations herewith show a newly patented nested stove pipe invented by C. A. Smith and manufactured by the American Mfg. Company of Minerva, Ohio, of which Mr Smith is general manager. The pipe is made with a double fold on the left edge, as

with the garbage tray withdrawn. The tray is a long semicircular pan perforated along both sides and having solid ends. After potato peels or the refuse from vegetables that have been prepared for cooking and the refuse from the dining room table have been drained to get rid of the excess of water, the solid matter is placed in the tray, which is in-

eral months, and states that his kitchen waste is converted into charcoal without any offensive odor, and that it is emptied only in the mornings, when the charcoal is used for hastening the fire. The carbonizer is made in different forms so that it can be used anywhere that an ordinary stove pipe can be used. It is so constructed that there is ample space around the tray for the passage of smoke and the products of combustion without affecting the draft, and it is claimed that when used on stoves connected with chimneys having a slow draft no disadvantage has been experienced. It is also claimed that when a coal range is not in use for cooking, a gas jet may be arranged below the garbage tray and the work performed in an equally satisfactory manner. It is said that it has been found popular with servants, who prefer it to using a kettle for the accumulation of the waste.



Fig. 1.—Showing Construction of Pipe.



Fig. 2.—Method of Fastening Pipe Together.



Fig. 3.—Pipe Nested for Shipment.

Smith's Nested Stove Pipe.

shown in Fig. 1. The right hand or raw edge is slipped in between the double fold. The notch in the raw edge comes through the slot in the folded edge. The lip is then turned back and fastens the pipe without the use of a rivet. The small or crimped end is self supporting, as the raw edge can go no further in than the fold, as shown in Fig. 2. It can be set up rapidly by any one with the use of a common awl or screw driver to turn the lip back. Fig. 3 shows pipe nested. It is made in all standard sizes and of all grades of steel and planished iron. It is packed 50 joints in crates for small shipments and wrapped in heavy paper rolls for carload shipments.

Household Garbage Carbonizer.

A device called the Household Garbage Carbonizer is being manufactured by the Sanitary Construction Company, 113 Devonshire street, Boston, and 30 State street, New York. As a means of disposal of kitchen garbage, the apparatus will recommend itself on a

serted in the carbonizer, fitting so as to form a practically air tight joint. The heated gases arising from the stove now come in contact with the carbonizer and the material in it, and after a few hours the effect of evaporation is such as to

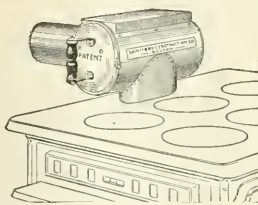
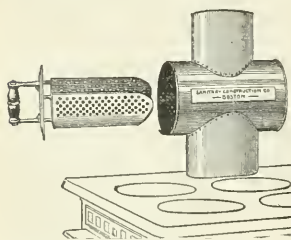


Fig. 2.—Used Instead of an Elbow.

leave the matter that has been deposited in it in a condition closely resembling charcoal. The tray is so arranged that it is readily removed, and refuse may be

The Splendid Oil Cook Stove.

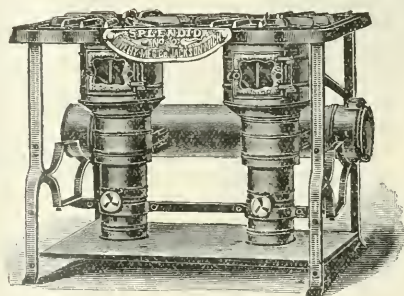
The accompanying illustration presents a general view of what is known as the No. 2 Splendid oil stove, now being made by the Novelty Mfg. Company of Jackson, Mich. This stove has a steel frame and an ornamental steel top, rendering it light, yet very strong. The oil reservoir is at the back of the stove, occupying such a position that it cannot become heated, and has a capacity of $\frac{1}{4}$ gallon. The chimney can be instantly removed for cleaning or for trimming wicks. The stove shown is 16 inches in height and has two 8-inch circular burners of simple construction. Other features to which the manufacturers call special attention include polished brass tank, polished brass font, illuminating door and large oven. It is stated that roasting, baking and broiling can be done with entire satisfaction; that the stove is powerful, free from odor and can be economically operated. It is especially adapted for use in hotels and summer boarding houses where increased capacity and quick cooking are required. The company have just issued a little pamphlet illustrating and describing their leading specialties, and in it the more important varieties of the Splendid stove are shown. Attention is also given to the Ruby and Twin Ruby, as



The Household Garbage Carbonizer.—
Fig. 1.—Attached to a Vertical Stove Pipe.

slight examination. It is designed for use in connection with the cooking stove and is made in several forms to meet the various requirements. It consists of an enlargement of the smoke pipe to hold the garbage tray, with sufficient space around the tray for the products of combustion arising from the stove to pass by freely. Fig. 1 shows the carbonizer attached to a vertical smoke pipe and

placed in it as frequently as it is made in the kitchen. The material which remains in the tray is available for kindling a new fire in place of wood and shavings. Fig. 2 shows the device used in place of an elbow, one of the many variations in shape in which it may be applied. Dr. S. H. Durgin, Chairman of the Boston Board of Health, has tested the device in his kitchen for sev-



The Splendid Oil Cook Stove.

well as to the portable oven which is used in connection with the company's goods.

BOYES & POLLOCK, Sistersville, W. Va., have dissolved partnership, and their stove and hardware business will in future be carried on by J. W. Boyers at the same place.

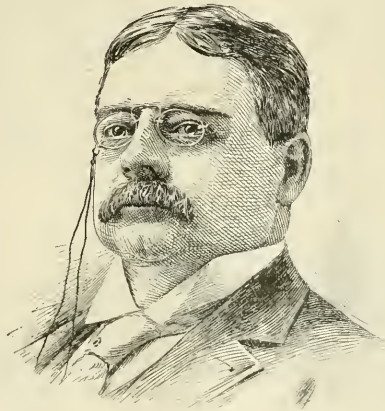
STOVE TRADE NOTES.

The Chicago Stove Trade.

The Chicago stove houses are now starting out their travelers for the regular summer campaign. Within the next two weeks the country tributary to the Garden City will be pretty well covered by these tireless messengers, all anxious to fill their order books. A few instances have been found in which an early start has been made by the representatives of some houses. From these come varied reports, but varying more in degree than in character. All are encouraging, showing a much better feeling among retail buyers than had been hoped. Several houses go so far as to report decided improvement as compared with the trade of last year. The demand on the Pacific Slope has shown up remarkably well. Montana and other portions of the Rocky Mountain district are doing handsomely. Carload orders are mentioned as though such things these days were not rarities. The Dakotas and Kansas and Nebraska are backward, as might be expected from States which last year were so severely scourged by drought, but Minnesota, Iowa, Missouri, portions of Wisconsin, Michigan, Indiana and Illinois are looking up encouragingly. Every indication now points to a good volume of business as the fall season draws nearer.

"But," sighs a forlorn stove manufacturer, "I am afraid we'll never again see such a year as 1892." Well, perhaps not this year, but possibly some other year not very far distant. In 1889 and 1890 there was little to be seen on which to base the hope of a great improvement in trade. The question was frequently asked, "What is the matter with the stove trade?" and answered as now by references to poverty-stricken farmers, or the competition of hot air furnaces, steam and hot water boilers, gasoline and gas stoves, oil stoves, &c. But somehow the trade picked up and a little improvement was visible in 1890, followed by decided growth in 1891 and a heavy movement in 1892. History will repeat itself. An improvement this year may naturally be expected to develop into greater proportions next year and so on up to a climax which should at least rival 1892.

Meanwhile, however, stove manufacturers are not resting on their past achievements and performances, but are making new ventures. They are almost without exception adding other lines to the manufacture of standard stoves. Gas stoves, furnaces, oil stoves, steel ranges, steam or hot water boilers are being taken up as side lines for the purpose of holding fast to or capturing more of the business which stove manufacturers look upon as legitimately belonging to them. They do not take kindly to this change in the character of their trade. A prominent manufacturer a short time since looked around his sample room, which was once filled with



S. TOWNSEND PECKHAM.

an orderly array of polished cook stoves, ranges and heaters, and as his eye rested on a conglomerate mass of oil stoves, furnaces, cook stoves, gasoline stoves, steam boilers and ranges, he said: "Well, this is too much like a notion shop to suit me." Yet he is an aggressive business man, and notwithstanding his inclinations will exploit any line in which he sees an opportunity to secure trade. This inclination with him and others is now running more particularly to cooking appliances. The success of the establishment making a specialty of wrought iron or steel ranges, together with the inroads of furnaces and boilers on the heating business, have almost effected a revolution in the stove trade. Increasing attention seems destined to be given hereafter to cooking apparatus, while heaters will be largely left to those who have most assiduously cultivated that trade.

S. Townsend Peckham.

In our last issue brief announcement was made of the death of S. Townsend Peckham, for many years the honored treasurer of the National Association of Stove Manufacturers, and at this time we present an excellent likeness of him together with some particulars of his life and business connections. He was born at Utica, N. Y., on January 11, 1839, being the son of John S. Peckham, who settled in Utica in the year 1817 and who in 1827 is said to have produced the first stove made in that city. At the age of 17 years S. Townsend Peckham left the Utica Academy and entered the employ of his father, who in 1835 had formed, in connection with his brother Merritt, the well-known firm of J. S. & M. Peckham. By reason of his ability, application and energy the young man soon acquired a thorough knowledge of stove manufacture in all its details, as well as a thorough familiarity with the mica business, in which J. S. & M. Peckham were largely interested. In the year 1879 John S. Peckham died, at which time his son acquired an undivided half interest in the business. The firm name, however, remained unchanged through all the years which followed and it was only a year or two ago that a corporate name took its place. About five years ago S. Townsend Peckham retired from business and went to Minneapolis, Minn., where he remained for nearly a year. Subsequently he removed to New York City, where for the past three years he was manager of the Palermo Mica Company.

Mr. Peckham was a charter member of the National Association of Stove Manufacturers and was to be found in attendance at nearly every convention. He was of genial disposition and very popular with all having business relations with him. He succeeded Uriah Hill, Jr., as treasurer of the National Association of Stove Manufacturers, being elected at the fifteenth annual convention, held at the Galt House, Louisville, the first week in February, 1886. He continued as treasurer until 1892, when he was succeeded by W. S. Stevenson, the present incumbent. By reason of Mr. Peckham's prominence in the mica trade he was familiarly referred to by his friends and associates as the "Mica King," and members of the stove association composed a song about him beginning with the words:

"It is, it is, a glorious thing
To be a mica king."

Mr. Peckham was possessed of excellent business ability and was highly regarded wherever known, commanding

the esteem and respect of a wide circle of business and social friends.

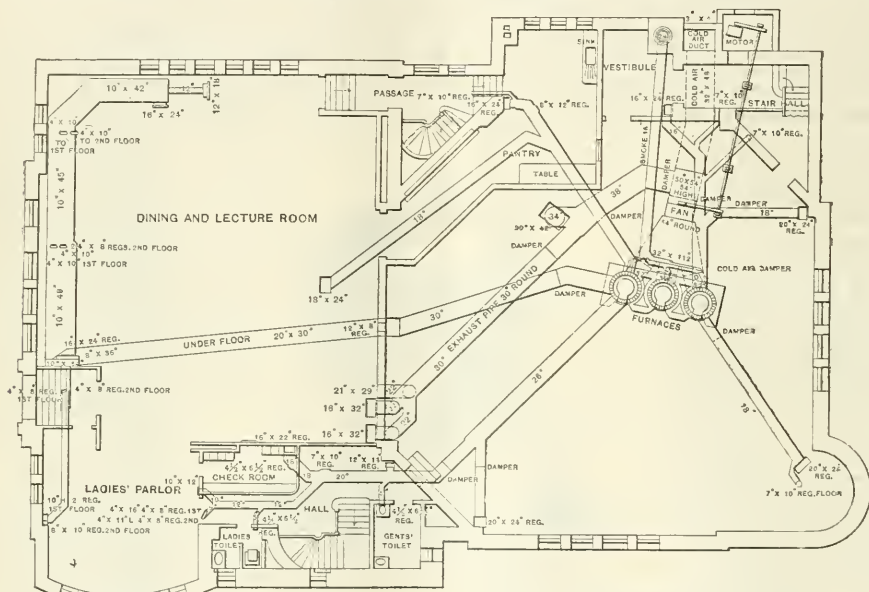
For more than a year past Mr. Peckham had not been well and three months previous to his death gave up business and took a trip South for his health. The change, however, did not bring the improvement sought and his death occurred suddenly of heart failure at midnight on May 11. The funeral services were held at 5 o'clock on the afternoon of Tuesday, May 14, at his late residence, 136 West Seventy-sixth street, New York City, the Rev. Dr. Brown, pastor of Westminster Church, Utica, officiating at the services. Tuesday night the body was taken to Utica, N. Y., where burial services were held at the Forest Hill Cemetery. Mr. Peckham leaves a widow, four sons and two daughters.

THE METRIC METAL COMPANY of Erie, Pa., favor us with a copy of a neat little pamphlet of pocket size which

Furnace Heating With a Fan.

A new departure in furnace heating is shown in the accompanying illustrations, the result of a series of experiments by Geo. W. Kramer of the firm of Kramer & Simonson, architects, Metropolitan Building, 1 Madison avenue, New York City. A few years ago while Mr. Kramer was a resident of Akron, Ohio, he was architect for a church building in that city; and as the congregation were desirous of having good ventilation and a heating plant which required the minimum amount of care and repairs, he drew up specifications and had a hot air furnace and fan system installed. The success of this system has led to its adoption in several churches for which his firm have been the architects. Churches in which this character of heating plant may be found complete or in course of construction are at Waterbury, Conn., Bristol, Conn., Williamsbridge, N. Y., and Forty-

heating surface. These furnaces are arranged in a brick shaft which is 36 x 48 inches in size and which is built up like a chimney so that the top is 15 feet above the surface of the surrounding ground. From the bottom of this cold air shaft the cold air duct is taken, as shown in Fig. 2, it being 32 x 48 inches in size. The duct continues this size to the fan chamber, which is 50 x 54 inches and 54 inches high. In one side of this chamber is an opening for a 38 inch pipe, and a 48-inch Hyatt & Smith disk fan is located on the furnace side of this chamber. The duct then branches into three supplies, one running to each of the furnaces, with dampers so placed that any one of them may be closed off when desired, the top of the furnace chamber being so constructed that all the pipes receive a supply of air when but one furnace is in use. The smoke from the radiator of the three furnaces is carried by means of



Furnace Heating with a Fan.—Fig. 1.—Plan of Basement and Heating Apparatus.

they have issued relating to their Classic gas stoves. These are made in several varieties and possess features for which strong claims are made. The body of the stove is of No. 20 steel clamped tightly to the frame, while the outside oven top and inside oven bottom are of cast iron, all outside walls being lined with heavy asbestos boards. The double and single boiling burners are provided with patented shedding roof caps, which prevent the flames from leaving the burners and the holes from becoming clogged by the boiling over of kettles during cooking operations. The makers state that their 17 and 19 inch oven doors are balanced by weights under the baking oven. The broiling burner is located between the boiling burners and the oven top, thus making broiling and toasting an easy matter. Full instructions for operating the Classic stoves are given in the pamphlet, as well as dimensions of broilers, ovens, &c. The company also manufacture gas meters, open gas grates and fire places.

eighth street and Eighth avenue, New York City. The plant which we describe and show has been installed at Derby, Conn., by S. G. Richards, 1454 Broadway, Brooklyn, N. Y., and was designed from the specifications by his heating engineer, W. E. Roys, who superintended the installation of the plant.

Fig. 1 shows the plan of the basement and heating apparatus. Fig. 2 is an elevation showing part of the plant. Fig. 3 shows the first floor and audience room. Fig. 4 shows the gallery. There are three furnaces used, each having a fire pot 16 inches deep made in two sections, and having a diameter of 30 inches at the top and 26 inches at the grate. Above the fire pot is a section in which the feed door is placed and which flares to receive a specially constructed radiator that is 36 inches in diameter. The radiator is composed of eight sections made of cast iron and is 36 inches in height. From each one of the sections there is a rib which extends out 6 inches to give additional

8-inch pipes into a 16-inch pipe, which is carried to a chimney 24 inches in diameter. The fan is driven by a 13 horse power Crocker Wheeler electric motor, which is located in a brick extension outside of the church proper so as to meet the views of the insurance companies. The power is transmitted from the motor to the fan by means of a shaft which is supported on brick piers, pulleys being arranged to connect with both motor and fan by means of belting. The brick piers are used to avoid the vibration and noise of the fan, motor and shafting being transmitted to the church, as has been found to be the case when the shafting has been attached to timbers which were fastened to the floor joists of the audience room. When the motor is run at full power the fan is capable of about 1000 revolutions per minute and secures a velocity of air of about 700 feet per minute. It has been found on experimenting with fans in connection with furnaces that it is necessary to protect the fire pot from the chilling effect of cold air which is forced against

it in order to secure proper combustion in the fire chamber; and for this purpose a brick wall was built around the fire pot extending up nearly to the top. In this case, however, it was found that the fire pot became excessively hot, and it was necessary to lower the wall to such an extent as to practically re-

when it rises to the horizontal distributing pipes. This pipe is shown taken from the left side of the furnace in Fig. 2; and a 12 x 18 inch register is taken from this pipe at the point where the turn is made at the top, for heating the dining and lecture room. Another opening to supply a 16 x 24 inch radi-

often complained of where large windows are found. The other heating pipes are run as shown in Fig. 1. Back of the pulpit and superintendent's platform are two ventilating shafts heated by independent apparatus. Air is turned into these shafts through openings which do not show, being

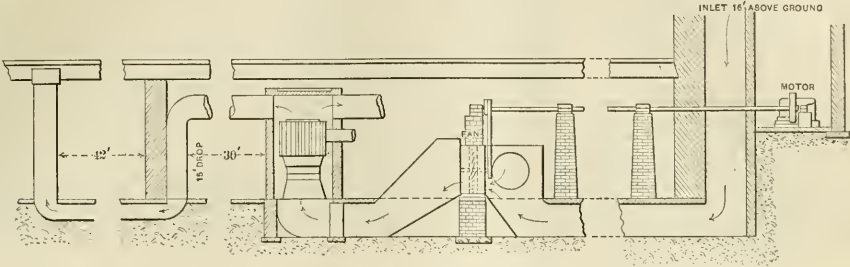


Fig. 2 - Elevation Showing Part of System.

move it. The fan being located back of the furnaces it forces the air through them, maintaining a pressure on them, so that should any crack or other opening occur in the furnaces it would be impossible for gas to escape, as the air pressure would force a current of air into the furnaces through the openings. In the basement, on the same level with the furnaces, one-half the building is

tor is taken from the vertical line at the other side of the lecture room. That section of this warm air duct which passes under the floor is made of mason work to insure its durability and is 20 x 30 inches in size. The horizontal distributing pipe is located under the floor of the Sunday school room; and connections are taken from it to heat the classrooms on the first and second

placed at the top of risers in the steps leading to the pulpit and platform. Other ventilating flues are taken from each of the classrooms shown. When in full operation the heating plant will change the air in the entire building, which contains 225,000 cubic feet of space, four times in an hour. In order to secure economical heating in extremely cold weather, previous to the assem-

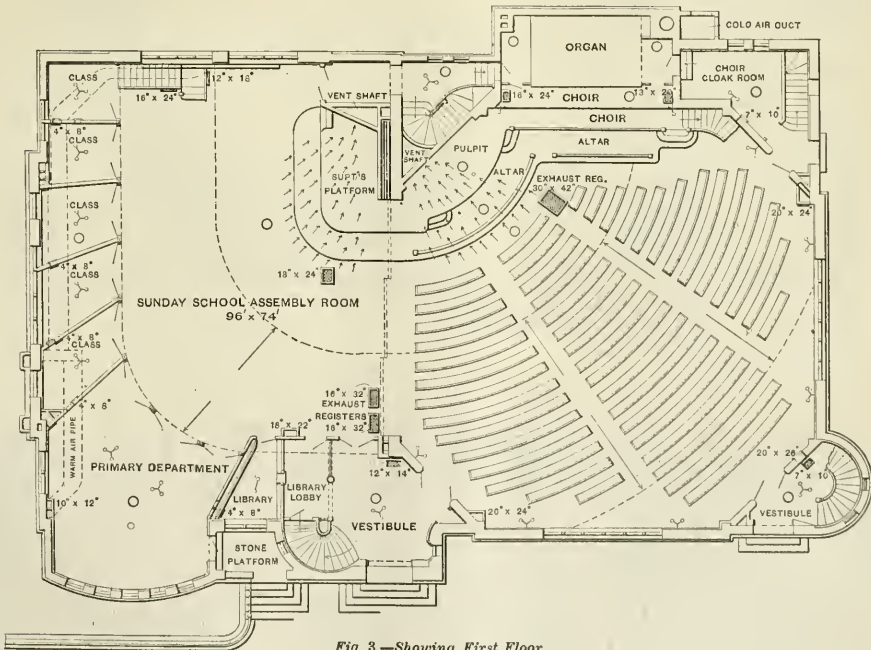


Fig. 3.—Showing First Floor.

finished as a dining and lecture room and a ladies' parlor, and in order to avoid disfiguring this room with pipes running across the ceiling the pipe heating about one-fourth the upper part of the building is made to take a drop of about 15 feet after it has run 30 feet from the furnaces, and pass under the floor of the dining and lecture room to the opposite side, or 42 feet further,

floors, the pipe continuing around and diminishing in size, as shown, until the back or north of the church is reached. Here under a stairway, and close to an immense glass window, two registers are placed, one being taken from the side of the pipe and the other from the end. The effect of this large discharge of air near the window is to prevent the usual cold currents, which are so

blage of the audience, an exhaust system has been arranged in connection with the apparatus. One large register is placed in the dining and lecture room and two in the floor of the Sunday school room and one large register in the floor of the main audience room. These are connected with a 38-inch pipe to the fan chamber, and by a system of dampers the cold air can be shut

off from out of doors and the air in the church revolved through the furnace. The apparatus was first put in operation during the coldest weather of last winter, and demonstrated its ability to keep the building at a comfortable temperature with the fans running at little more than half of their full speed and with but two of the furnaces in operation. It has been found on investigation by the Church Committee that the temperature is nearly equal from floor to ceiling and that the gallery is not overheated. It was also found that the building can be warmed in about two hours. It is, therefore, not necessary to start a fire over night for Sunday service. It is furthermore pointed out that there is no danger of the apparatus freezing when not in use. It is stated that a noticeable absence of drafts has been found, and that the temperature of the incoming air is never unpleasantly hot and dry. Special notice has been taken

power to drive it by electricity, water motor or gas engine, should be especially designed for the purpose.

Isaac Sheppard & Co.,

Philadelphia, Pa., have just issued a catalogue covering a line of their goods especially suited to the building trades. The book contains 28 pages, 11½ x 8½ inches in size, and opens with Paragon hot air furnaces, of which numerous varieties are shown. A page is devoted to a description of the furnaces and the points of advantage they are claimed to possess over other makes, following which are Paragon combination furnaces for heating by hot water and hot air. A broken view represents the hot air parts treated transparently so as to show the hot water circulator. This style is described as made in three sizes, with either steel or cast radiators. The Paragon brick set furnace has a front which is higher and wider than the

take cold air from beneath, or upon feet and front support, to take air from a cellar. It is made in six sizes. The line of furnaces concludes with the Excelsior, which is shown with tubular and plain drums, and is described as a cheap and efficient furnace. Royal Fidelity ranges, for hard or soft coal, coke or wood, are next shown. These are designed especially to meet the requirements of large as well as small families. The ranges are shown in various styles, with horizontal boiler, high boiler front and cast mantel, low boiler front, hot air attachment, portable for vertical boiler and for brick setting. Fidelity ranges follow and are described as smaller than the Royal Fidelity, but made in similar styles. The Excelsior brick set range is made in several sizes, with single and double ovens and with and without hot air attachment. All the boilers used in the ranges are said to be made from extra heavy steel plate, black or galvanized, and they are all tested to a

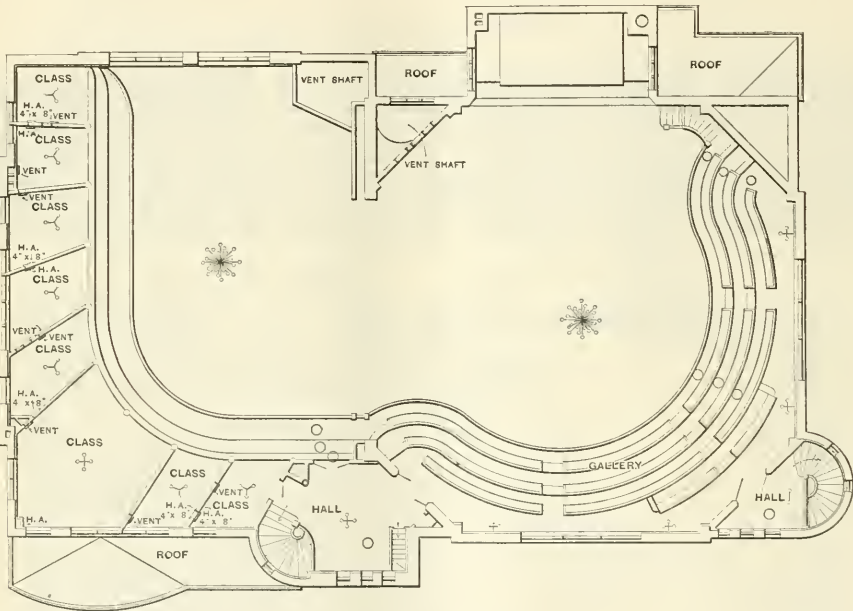


Fig. 4.—Showing the Gallery.

of the purity of the atmosphere and its effect on the congregation, the claim being made that there is less coughing and fanning than is ordinarily noticed in a large congregation and also that it is not necessary to heat the church to a temperature of 70°. Another advantage which is claimed for the apparatus is that it can be used to create a circulation of air during the summer season. It is stated that as the fire is run but a few hours considerable fuel is saved, and that the expense of running the electric motor for the short time necessary is but slightly in excess of the fuel saved. In all of the plants of this kind that have been erected progress has been made in perfecting this system of heating, which it has been demonstrated has clearly passed the experimental stage. With each plant something new has been learned and it is the opinion of Mr. Kramer that a furnace for use in connection with a fan, whether the

front itself, so that the latter may be easily removed through the front opening without disturbing the brick work. The furnace is fitted with removable draw center or triplex grates, operated by a lever shaker, while the interior construction is the same as in the portable furnaces. Another view shows the furnace with steel radiator and with an adjustable cast iron elbow. This style is made in three sizes and is furnished with the combination hot water attachment when desired. Still another view shows the furnace with cast radiator for soft coal, after which are described the Fidelity steel plate furnaces of the three-drum type, with central draft and revolving scraper and embodying some of the features of the Paragon furnaces.

The Fidelity is made in three sizes and is offered as an efficient furnace, lower in price than the Paragon. The Saxon steel plate furnace has a double drum and revolving scraper, and is adapted to be set either over a pit, to

pressure of 150 pounds to the square inch. In a paragraph on page 20 of the catalogue it is stated that as the pressure upon locomotive boilers rarely exceeds 120 pounds to the square inch, some idea of the strength of these range boilers may be gained. The book concludes with illustrations and descriptions of Fidelity fire place heaters with round and square frames and with and without magazines. The book is bound in stiff paper covers with cloth back, the front page bearing the title, and the back page a large cut of the firm's new Royal Excelsior range, a portable range made in 18 sizes and varieties.

THE CENTRAL STOVE REPAIR COMPANY, 357 West Thirty-eighth street, New York, issue a catalogue to the stove trade giving the names of stoves and makers for which they can supply grates, bricks and other fixtures. They also make a specialty of black lead, stove bolts and a line of supplies.

ODD PLATES.

THE RECEIVER of the Sloux City Stove Works, Leeds, Iowa, has applied for authority to sell the plant, and it is expected he will turn it over to a new company as soon as authorized so to do by the court.

THE ANNUAL MEETING of the stockholders of the Keeley Stove Company was held at Columbia, Pa., on the afternoon of Monday, May 13, when the following directors were elected to serve during the ensuing year: S. S. Detwiler, Hiram Wilson, H. F. Bruner, William Patton, J. H. Herr, F. A. Bennett, William B. Given, William Morris and Frank Bucher.

A RECENT ISSUE of the *Canadian Trade Review* is the authority for the statement that the Gurney Stove & Range Company, Limited, have applied for incorporation in Manitoba to deal in stoves, ranges, hardware, metals, &c., the capital stock being placed at \$50,000. It is also stated that the company will assume the business in Manitoba of the Gurney Company of Hamilton. The names of those applying for incorporation are given as Charles Gurney, John Henry Tilden, Oswald Gurney Carscadden, Henry Gurney Carscadden of Hamilton and James Burridge and Isaac Walter Martin of Winnipeg.

SCHILL BROTHERS of Crestline, Ohio, favor us with an advance copy of a new range catalogue which they are distributing to the trade. It is a neatly printed publication, bound in paper covers, with side title consisting of the words "Schill's Steel Ranges" printed in blue upon a light shade of buff. In the introduction to the trade the makers refer to some of the many features embodied in the Schill steel ranges, special attention being directed to the patent double balanced door or full drop oven door with which the ranges are fitted. All the oven doors have arms to support them when open, the arrangement being such that in opening the door the lower half drops down and forms a substantial shelf, while the other half turns up, forming a shield to prevent the hot air from striking the face of the person operating it. The opening of the door is accomplished without the means of weight or springs, and the upper part is entirely independent of the lower, yet either one will operate the other by a mere touch of the handle. The Schill range is provided with either duplex or flat dumping grate, one size of which fits any size of range the firm make. The damper is operated from the front. The entire body and the oven are made from cold rolled steel, the oven bottom being heavily ribbed to prevent warping, while the body is lined with asbestos and steel. The makers state that they are prepared to offer over 200 distinct styles and sizes of the Schill range, a few of which are illustrated in the catalogue under review.

THE MAY NUMBER of the monthly publication issued by Fletcher, Russell & Co. of Warrington, England, consists of 146 pages, illustrating a great variety of gas burning appliances. Special attention is directed to the company's triple cased indestructible ranges with patent removable porcelain enameled linings, which are said to be rapidly superseding all others. The assortment of gas cooking and heating stoves is a varied and interesting one, covering all requirements from the smallest to the largest. Attention is given to water heaters, burners, and iron heaters, greenhouse boilers, blow

pipes, forges, furnaces, fire pots and other laboratory appliances.

RATHBONE, SARD & Co. of Albany, N. Y., have issued some very pretty cards calling attention to the Acorn stoves and ranges. One side of the card has a lithographed picture printed in pleasing colors, while the other side states, among other things, that Acorn ranges and stoves have stood the test of over 60 years, that only the best new iron and the highest grade of skilled labor are used in their construction and that they are suited for all kinds of fuel.

THE FOLLOWING QUOTATION from a letter recently received from a correspondent in Buffalo will be of interest in its bearing on the subject of gasoline insurance, a subject which was recently discussed in our columns: "The rules adopted by the Buffalo Board of Fire Underwriters provide that no extra charge shall be made for the use of vapor stoves, the only restriction being that the insured must obtain a permit and attach it to his policy, allowing the use of vapor stove. The stove must have a safety tank and the supply of gasoline must be kept outside of the building."

W. H. PFAEHLER of the Abram Cox Stove Company, Philadelphia, sailed for Europe on the "Friesland" on Wednesday last.

J. WOODRUFF & SON, Salem, Ohio, have just issued from the press an exceedingly neat and tasteful supplement consisting of eight pages carefully arranged and bound in paper covers of a deep red. The side title consists of the name and address of the manufacturers, with a line at the top stating that the business was established in 1846 and the concern incorporated in 1879. The printing is in delicate shades of two colors, and is as neat as anything we have lately received. The pages call attention to the makers' line of Excelsior cook stoves, designed for burning coal and wood. These goods are made in a number of styles and sizes, and possess, among other features, square ventilating oven, top and centers, plain draw out hearth, oval fire box for coal, cemented oven top, large ash pan and nickel trimmings. The Excelsior four-hole cook for wood only is made in three sizes and has square ventilated oven, draw out hearth, extra large fire box, deep ash pan, &c.

THE BARSTOW STOVE COMPANY of Providence, R. I., are noted for the quaintness of the announcements which they issue. The latest scheme is designed by the Livermore & Knight Company of Providence and consists of a folder of heavy paper containing within its covers a map showing a multiplicity of islands, reefs, shoals, &c., but with a series of arrows indicating the safe channel. The course is from Pleasure Island to Prosperity Island, which is reached, according to the map, by the Bay State Line. The sailing directions for reaching Prosperity Island are given below and are worth memorizing: "Steer straight into Caution Channel, avoiding Cheap Dodge Creek and Pleasure Island (strong current toward the island). Keep Long Credit Rocks well on the starboard. Pass Sit Down Bay at full speed, avoiding Endorsement Reefs (no lights here) and Speculation Shoals (considerable fog here), keeping Mining Stock Sands well on the port (a great many derelicts about here), keeping well away from Short Cut Creek (passage very uncertain). Southeast by Sleeper's Island and Sporting Creek (sharks large and hungry).

Keep High Interest Ledge on the port (no soundings here), then into Cash Discount Channel. Pass well to the east of Fast Horse Rocks (Dark Horse Rock covered at low tide). Avoid Syren Bay, anchorage expensive here. Land all cranks at Kicker's Point. Steer midway between Firewater Shoals and Poker Bluff into Industry Channel and you will, in time, bring up at Prosperity Island, the objective point of all who sell the Bay State stoves, furnaces and ranges and the Dangler gasoline stoves."

A. C. BARLER MFG. COMPANY, 104 and 106 Lake street, Chicago, are now making preparations for the coming season, and expect to inaugurate a vigorous campaign in the line of oil heaters. They will offer some new features which they are not quite ready to disclose. In their new location they enjoy very great advantages, having much more room than before, besides securing much better light, which is in itself a guarantee of more efficient workmen.

THE STANDARD LIGHTING COMPANY of Cleveland have established a retail branch at 54 State street, Chicago. They occupy a store room 25 x 90 feet and a large basement. The arrangement of this store is such as to enable prospective buyers to witness any style of gas stove in operation. A large line of varied sizes and styles extends along one side of the deep store room, all being connected with the gas service. One range is connected with the water service so as to demonstrate the rapidity with which water can be heated with the water heater specially designed for their ranges by this company. They carry a full line of gas and gasoline stoves, oil heaters, lamps, torches, &c., covering all the goods made by the company. Prominently shown in the room is the patent reflex knock down oven for gas, oil or oil stoves, or for small gas stoves, on which the company have had and are still enjoying a very large trade. The store room has its own elevator connected with the basement for the convenient handling of goods. The manager in charge is C. W. Austin, well known to the gas and gasoline stove trade. He is assisted by L. W. Lewis, who for the past five years has been with the Standard Lighting Company, and by C. H. Behlen, a gas stove expert. The location of the store is excellent, and the arrangements have been made on a scale which will no doubt prove highly attractive to the citizens of Chicago.

THE FULLER WARREN COMPANY of Milwaukee and Chicago have recently brought out a number of new goods, of which samples are now shown on the floor of their Chicago salesroom. Prominent among these is a new gas range named the Stewart. This is a decided departure for the company. The range is beautifully designed, and is built in cabinet style, with or without water heaters. It is made with four-hole and six-hole tops. The oven is removable. Self closing doors are provided for the oven and broiler. The decoration is highly ornamental, consisting of molded and nicked borders around doors, together with richly ornamented name plates. Care has been taken in the construction of these ranges to embody all the improvements essential to the production of a first-class modern gas range. Fine specimens are exhibited of the first steel ranges which have so far been made at the Milwaukee works. These ranges are made in two sizes, with four

and six holes. They have drop oven doors, duplex grates with cast linings and round end fire boxes. They are made with high shelves and with or without high closets. They are handsome in appearance, being finished with nickel bands around the top shelves, nickeled and handsomely modeled corner pillars, nickeled door frames, heavy towel bars on each end, &c. These ranges have been named the Steel Stewart. They are stated to be economical hard coal ranges, although adapted to use either hard or soft coal, and have already proved to be good sellers. A new line of six-hole medium priced ranges has been brought out under the name of the Premium Stewart. They have a square oven, and oval fire box, sheet flue, draw center grate, draw hearth plate and mica panels in the front door. They are finished in all styles on base, having no low warming closet, and are adapted to any kind of fuel. The ornamentation is in rococo style, of bold and striking design, producing the effect of massiveness. Another line, ornamented in a similar manner, is the new National Stewart four-hole range, adapted to all kinds of fuel and furnished with several feeds. These ranges are specially made with hard coal or pouch feed, or with a closed front for wood only. Cooking stoves have been brought out in precisely the same style, and they will shortly be followed by a six hole range in the same class.

HART & CROUSE, Utica, N. Y., and 211 Water street, New York, are distributing a 48-page catalogue of their Royal hot air furnaces. In their introductory remarks they say: "The method of heating buildings by hot air furnaces is a very popular one and one that has been more largely used during the past half century than all other heating systems combined." This is followed by a description of the rules which must be observed to secure successful operation and satisfactory results. The first few pages are devoted to the Royal hot air furnace, shown both portable and brick set and with steel and cast iron radiators. This is followed by the Prince Royal, which is made with large feed door and adapted for burning both coal and wood. The next pages are devoted to the Royal Victor and Imperial hot air furnaces. Two pages are used for showing the Pleasant Home ventilating furnace. The Sterling coal furnace and Royal wood furnace are shown both portable and brick set. The Prince Royal combination hot air and hot water furnace is shown, with a table giving the amount of radiation which each size will carry. The Royal smoke consumer is a furnace constructed for burning soft coal and is provided with ducts which carry air from the outside of the furnace to the fire chamber. Half tone engravings are used to show sections of the Prince Royal and Royal, illustrating the construction of the radiating section and of the grate and ash pit. The last pages of the book give instructions for setting and managing both the brick set and portable furnaces and tables giving the dimensions, price and capacity of the furnaces.

THE CLEVELAND FOUNDRY COMPANY have moved their New York office to 103 Beekman street, where they also have a frontage on Pearl street. They are arranging to make a fine display of the Puritan gas and oil cooking stoves.

THE NEW YORK STOVE REPAIR ASSOCIATION, 230 Waterstreet, New York,

are getting things very conveniently arranged in their new quarters. They occupy the basement and four floors of the building, and have constructed nearly 10,000 bins for storage of the various kinds of stove repairs which they carry in stock.

THE BARTSTOV STOVE COMPANY, Beekman and Water streets, New York, are making a specialty of the Dangler line of vapor stoves. They have a fine line of samples of the New Process, and are making a strong push on the new Gem generating stove. This stove can be lit in a very short time, without any high flame or noise, and in operation burns with a flame very similar to that shown on the New Process stoves. The leader of their line of gas hot plates is the Irving, which has a specially constructed burner for which high efficiency is claimed and which is provided with a regulator for governing the air mixing chamber.

THE PERRY STOVE COMPANY, 242 Water street, New York, have a gas hot plate in their Champion, which is becoming quite popular in the trade. The supporting feet are much higher than those used heretofore, and the burner is made in sections so that it can be readily removed from the stove for cleaning should it be necessary.

CHARLES O. LYON, president of the Thatcher Furnace Company, 240 Water street, New York, is rusticking in the Adirondacks.

THE RICHARDSON & BOYNTON CO., 234 Water street, New York, report that they are highly gratified with the performances of their Perfect hot blast furnaces during the past winter. The efficiency of the hot blast has been proven, whether used with hard coal or soft coal or the fine fuels that are generally used under power boilers. A large number of these furnaces have been sold in widely different sections, and the outlook for an increased trade this year is said to be good.

THE CENTRAL STOVE REPAIR COMPANY of New York City have been incorporated, with capital stock of \$35,000. The directors named are Albert W. Herche, James A. Bullaes of New York City and B. C. Davis of Brooklyn.

FLASHINGS.

THE CHATTANOOGA STEEL ROOFING COMPANY, Chattanooga, Tenn., favor us with one of their illustrated catalogues for 1895. It is a pamphlet of large dimensions, measuring 12½ x 9 inches, bound in colored paper and containing 60 pages of illustrations and descriptions. The publication is divided into two parts, the Galvanized Iron Work Department and the Roofing Department. The first goods shown are fronts, 21 different styles being illustrated, so that the architect or builder has a very large variety to choose from. Cornices cover four pages, then come window caps, with two pages, while finials are presented in many different styles and designs. Conductor heads are shown on page 26, while cresting, cresting blocks and finials occupy four pages. Skylights, eave troughs, piping and miscellaneous goods follow, the last two pages of the department being given to cast iron work. The Roofing Department covers 21 pages. It relates to Crowl's patent steel roofing, double seamed steel roofing, Eureka roll and capped patent crimped and three-crimped steel roof-

ing. Steel weather boards, pressed bricks, ceiling and siding, corrugated iron, corrugated doors and shutters, &c., besides a full assortment of roofing sundries, complete the pamphlet. The book will be valued by all who are interested in sheet metal work of this sort, and those of our readers who have use for the materials referred to will do well to secure a copy of it.

M. CULLEN, Hartford, Conn., has the contract for the handsome copper cornice and window caps on the Freeman Building on Asylum street, and also for all the metal work on the Old People's Home Building in West Hartford. Mr. Cullen also has the contract for the sheet metal work for some extensions to the plant of the Pope Mfg. Company. One will be a forging shop, 20 x 46 feet; another building is 50 x 154 feet. An extension 100 feet long is being made to their repair plant.

THE VINCENT ROOFING COMPANY, 445 West Forty fifth street, New York, are engaged on the sheet metal work for the ventilating system in the public school at Eighty-second street and West End avenue, for which they also have the roofing contract. They have the contract for the cornice, roof and balustrades for the new Montauk Theater, which will be erected in Brooklyn. They also did the sheet metal work for the ventilating system in the Hotel Majestic, New York. They have recently completed a copper roof on the residence of J. A. Bailey, 155th street and St. Nicholas avenue, using sheets 14 x 20 inches in size and laying a sheet at a time, as tin roofing is frequently done.

G. BICKELHOUT, who makes a specialty of metallic skylights, at 243-245 West Forty-seventh street, New York, has excellent shop facilities for producing these goods, and has a number of patent devices for adding to the efficiency of his skylights.

THE GARRY IRON & STEEL ROOFING COMPANY, Cleveland, Ohio, shipped last week a large iron building and covering into Texas.

THE CHATTANOOGA STEEL ROOFING COMPANY, Chattanooga, Tenn., are making an addition to their buildings.

THE NEWPORT ROLLING MILL, Newport, Ky., report a very substantial advance in the demand for their corrugated roofing, galvanized iron and stove pipe. Their mills are kept at work day and night, with orders on hand said to be sufficient to carry them through the entire summer.

THE ILLINOIS ROOFING & SUPPLY COMPANY, 203 Lake street, Chicago, have issued a number of circulars referring to their specialties. Much attention is given to Gilbertson's Old Method roofing tin. A specially attractive circular is gotten up in folder style, with each page handsomely illustrated, with one page ruled for an address and another page arranged to form a card for requesting prices from the company. Roofing specialties are shown on the other pages.

The contract for the continuation and termination of the extension work at the Port of Vera Cruz has been renewed with the firm which began the work some time ago. It is said that, in four or five years at the most, the largest ships will be able to load and unload at the piers of Vera Cruz harbor, instead of having to remain in the offing, as has been the case hitherto.

TRADE REPORT.

Metal Market.

Pig Tin.—Prices in the wholesale market have fallen about 0.20¢. The decline is attributed in part to realizations by holders of stock purchased when prices were about 1¢ below where they are at the present time and to vigorous manipulation by the bear interest in London and on this side of the Atlantic. To all accounts purchases by consumers and interior dealers have fallen off and their requirements seem to be satisfied in no small degree by deliveries that are being made on old contracts. The consumption is heavy, nevertheless, and the amount of Tin taken thus far this month has considerably exceeded the importations, leaving the statistical position stronger. In small lots from store Straits Pig is quoted at 15½¢ @ 16¢ per lb.

Copper.—The market is very firm at the line of prices established last week and a fairly large business has been done in Lake Superior Ingot and Electrolytic sorts for future delivery. The buying was largely on home trade account, but not wholly by consumers or exporters. In other words, there has been a certain amount of investment, and that, too, in the face of the refusal of a very prominent mining company to agree to the proposition to restrict exports. This action confirms late reports of actual business and prospects being such that the market is virtually taking care of itself despite quite heavy output. Casting stock has not fared quite as well as the higher grades of Copper. The price for small lots of Lake Ingot from stock remains at the level of last week's quotations, namely, 11½¢ per lb.

The monthly production of Copper in the United States has been as follows, according to John Stanton, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second, being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.			
	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons.
Second half			
1892.....	59,239	6,287	65,526
First half			
1893.....	62,470	6,478	68,938
Second half			
1893.....	67,290	8,252	75,542
Totals, 1893.....	129,760	12,730	142,490
First half			
1894.....	73,951	8,040	81,991
Second half			
1894.....	68,592	9,049	77,632
Totals, 1894.....	142,543	17,089	159,632
1895.....			
January.....	10,094	1,600	11,694
February.....	11,130	1,600	12,730
March.....	12,553	1,600	14,153
April.....	11,944	1,600	13,544

The product of the foreign reporting mines and the United States exports were as follows:

	Foreign reporting mines. Gross tons.	United States exports. Gross tons.
Second half 1892.....	39,655	17,990
First half 1893.....	41,048	20,381
Second half 1893.....	40,647	60,031
Totals 1893.....	81,495	80,392
First half 1894.....	45,293	38,935
Second half 1894.....	43,258	37,362
Totals, 1894.....	88,551	76,297
1895.....		
January.....	6,737	7,144
February.....	8,730	3,450
March.....	7,424	3,011
April.....	7,219	6,677

Sheet Copper.—The demand for Sheet Copper and Manufactured Copper of all descriptions continues to expand. Orders are coming in very freely and a feeling of decided confidence is manifested among dealers and consumers, who appear anxious to replenish their depleted stocks. Manufacturers, on the other hand, are only quoting on orders for immediate delivery or very early shipment. The leading mills have withdrawn quotations and prices are stiffening, with every prospect of a general advance in the near future.

Pig Lead.—Purchases here have not been as heavy the past week as they were during the preceding, but considerable business has passed and prices have held up decidedly firm. A certain amount of speculative interest has prevailed, more particularly in the West, but aside from that the business done has served to at least add tone to the market. Small business has been good, with prices for moderate jobbing lots at 3½¢ @ 3½¢ per lb.

Lead Pipe and Sheet.—An extremely good demand has developed from the plumbing trade. Manufacturers are busy on orders and the outlook is regarded as favorable for better prices and an expanding market. While list prices are adhered to in this section a stiffening tendency is apparent, which will probably lead to an early revision of the current rates in order to place them in correspondence with the rise in raw material.

Spelter.—The metal continues to maintain the strong tone noted in our last report. Stocks in makers' hands are light and the offerings are consequently limited. Eastern buyers have purchased somewhat freely, and it is an open secret that some lots were taken by local firms closely identified with export trade. The market is not at all excited, but is showing what looks like enduring firmness. The current rate for small lots of good Western Spelter from store is 4¢ per lb.

Sheet Zinc.—The scarcity of this material continues, and stocks in jobber's hands are of the lightest character. Many dealers have ceased to quote, being unable to secure the filling of their orders at the works, which are hard pushed to meet the current demand. Prices are somewhat higher than a week ago, and seem inclined to mount still further. For cash lots, where obtainable, the ruling price for Sheet Zinc is 6½¢, but a slight advance on this rate has had to be paid in some instances where requirements were

urgent. Small lots are quoted at 7¢ per lb.

Antimony.—Merely routine business has been effected and prices are variable. Fair quotations for small jobbing parcels are 8½¢ @ 9¢ for Cookson's and 8¢ for Hallett's.

Nickel.—Sellers' figures remain at 35¢ @ 40¢, according to quantity and terms.

Tin Plates.—While Tin Plates are the last branch of the metal trade to respond to the general advancing tendency in prices, the aspect of business in this line is decidedly on the mend. There has been quite a brisk movement in more than one line of material. Ordinary Cokes for canners' and can makers' use have secured quite a large amount of attention in the past week, and some substantial orders have been placed for future deliveries, although the prices named have been generally those now ruling. In a few cases, where contracts have been made for shipments rather far ahead, an advance of 7½¢ @ 10¢ per box has been asked and obtained. The supply of foreign Cokes is taxed to the utmost and the American product of like nature is figuring largely in the present movement, at prices which compete successfully with the imported article. The outlook for the canning trade is regarded as very bright, the recent cold snap not appearing to have worked harm to the fruit and vegetable crops to anything like the extent feared a week ago. The demand for American Terns from the roofing trade has been liberal in this section, and is likely to increase. American works are generally reported to be crowded with orders, some to as late as August. These Plates practically rule the market now, imported Roofing Plates being less and less in demand, as the domestic Plates are offered at prices close to and in some cases lower than those at which the foreign article can be imported. Prices for Americans are somewhat irregular. Bright Charcoal Plates are securing a fair share of trade. In view of the increased demand from consumers and of the fact that the output on the other side is restricted at the present time, an upward movement in prices is looked upon as more than likely to develop before long, provided the rapidly increasing output of the American works does not operate to the contrary.

A special London cable dispatch of May 22 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate is in better demand and more business is doing. Buyers seem eager to place orders at late lowest rates, but makers are cautious and unwilling to sell forwards. The advance in Tin brought about a slight advance, but quotations are nominally unchanged. Prices, f.o.b. Wales, are as follows:

Bessemer Cokes, 1C 14 x 20	9 1/4 @ 9 3/4
Siemens Cokes, 1C 14 x 20	9 1/4 @ 9 6
Terns, 20 x 28	18 @ 22 8
Charcoals, 1C 14 x 20	11 @ 13 6

Sheet Iron.—Manufacturers' agents are in many cases unable to take any further orders for either Black or Galvanized Sheets for reasonably early de-

livery and are quoting only on orders for future delivery but not later than July 1. The leading mills are all reported as having their books filled to the date named. The outlook is excellent and intimations are given of a further advance in prices. A heavy demand prevails for Galvanized Sheets, of which jobbers in this district have none too large stocks. Prices for Galvanized Sheets are firm, and the conviction exists that they will shortly be higher. In sympathy with the increased firmness and scarcity of Galvanized Iron, the price of Roofers' Supplies made of this material, such as Eave Troughs, Elbows, Conductors, &c., is also developing considerable firmness, and an early advance is looked for. Small lots of No. 27 Common Iron, from store, are quoted at 2.80¢ $\frac{1}{2}$ lb. Galvanized Sheets are quoted at 75 and 5 ¢ @ 75 and 10 ¢ off, according to size of order and conditions of delivery.

Chicago Report.

Scrap.—The market is very promising and the values of Old Material are growing stronger. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap.....	\$7.50	...
Machinery Cast.....	5.50	...
Malleable Cast.....	5.00	...
Stove Plate (free of burnt).....	4.00	...
Burnt Iron and Grate Bars.....	3.00	...
Sheet Iron and Hoops.....	2.00	...
Flow Steel and Breaking Stock.....	4.00	...
No. 2, such as Shovels, Hoes, &c.....	3.00	...
Old Boilers—whole (iron).....	3.00	...
(Iron)—cut in single Sheets and Rings.....	5.00	...
Old Gas-Pipe and Boiler Tubes.....	5.00	...
Cast Borings.....	3.00	...
Turnings.....	4.00	...
Horseshoes.....	7.50	...
Copper Wire and Heavy.....	8	¢
Copper Bottoms.....	7	¢
Copper Clips.....	7½	¢
Heavy Brass.....	6½	¢
Light Brass.....	6¼	¢
Pipe Lead.....	2½	¢
Tea Lead.....	1½	¢
Zinc.....	2½	¢
Rubber.....	4	¢

Anthracite.—The demand is increasing. Carolus lots of 12 net tons or over are quoted as follows:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.00 \$4.75
Milwaukee, Wis.....	4.60 4.75
Kansas City, Mo.....	7.80 7.95
Council Bluffs, Iowa.....	7.80 7.95
Lincoln, Neb.....	7.95 8.10
Sioux City, Iowa.....	7.80 7.95
Aberdeen, S. Dak.....	7.85 8.00
Dubuque, Iowa.....	5.90 6.05
Madison, Wis.....	6.10 6.25
St. Paul, Minn.....	7.10 7.25
Burlington, Iowa.....	6.10 6.25
Des Moines, Iowa.....	7.60 7.75
Davenport, Iowa.....	5.90 6.05
St. Joseph, Mo.....	7.80 7.95
Leavenworth, Kan.....	7.80 7.95
Omaha, Neb.....	7.80 7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.	
Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

JOHN WILLIAMS, 554-556 West Twenty-seventh street, New York, makes a specialty of brass, bronze and wrought iron work in Gas Fixtures, Grilles and Architectural Work. He has recently finished the equipment of the Elevators and Railings in some large buildings.

CONDITION OF THE Hardware Trade.

A STRONGER and more confident tone characterizes the market. In our review of the situation last week reference was made to a perceptible improvement, both in the volume of business and in the general feeling, but since then there has been a still further improvement in both of these regards. The advance in Iron and Metals, together with the demand for higher wages, which in many cases has been yielded to, are significant features of the present condition, especially as they result in higher prices on many lines of heavy goods. In cases where no open announcement has been made of advanced prices manufacturers are withdrawing outstanding quotations, and particularly extras and special discounts which were named not long ago with a view to inducing business. There are, of course, many lines of goods in which no change has as yet taken place, the manufacturers of such lines not being as yet much affected by the advances in Iron and Metals and wages being still at former figures. Even in such goods there is, however, a better feeling, and manufacturers are watching the market closely and considering the feasibility of taking advantage of any favorable turn, hoping that before long there may be an opportunity for them to get more remunerative prices. It is noticeable that comparatively few orders are being placed on goods which have recently been advanced, buyers holding off a little to see whether or not the higher prices will be maintained. There is, however, a good deal of business in lines in which advances are expected. Buyers, as usual, make strenuous efforts to place orders at the old figures after advances have been made. Some manufacturers are experiencing the effects of their recent acceptance of large orders at low prices, some of them having their books loaded with orders which will occupy them for months to come at the prices which were based on lower raw material and lower wages than are likely to rule in the future. In view of the present state of things it is obviously wise for manufacturers to be exceedingly careful in accepting orders for future delivery at present prices. If the market should take an upward turn and business resume its former volume the manufacturers, on whom the stress of the depression has borne so heavily, will be in a position to get the benefit of the improved condition.

Advices from Chicago.—The severe frost of the past week seriously affected all branches of the Hardware trade. The demand for dairy goods and Tinware was decidedly checked, nevertheless the general demand increased, and the total volume of business the past week showed a good gain. Orders are large and more numerous, and fresh ventures in the retail trade are occurring, which call for new stocks. Jobbers have found so many advances on goods that they are instructing their salesmen not to quote except for immediate acceptance and to leave no open prices behind them. Advances made quite recently cover Agricultural Wrenches, Screws, Wrought Butts, Iron and Steel Squares, Bright Wire Goods, Strap and T-Hinges, Glue, Cowbell Straps, Ingot Copper, Copper Sheathing and Bottoms,

Soldering Coppers, General Copper Goods, Pig and Bar Lead, Shot, Wire Nails, Steel Cut Nails, Barb Wire, Fence Staples, Sheet Iron and Sheet Steel, Galvanized Iron and a few other articles. This shows how extensive the upward movement has become. Jobbers are reported by manufacturers' agents to be freely placing orders now for future delivery. Some of the contracts thus made are among the best ever known, showing great faith in the future. Spring frosts are not regarded as much of a menace to the trade. They annually occur, as farmers are always inclined to plant too early, taking their chances on the uncertainty of the weather. A special feature of this market recently has been the flurry in Sheet Zinc, caused by a sharp demand from the East. Jobbers' stocks have been almost depleted in consequence of this demand.

Notes on Prices.

Wire Nails.—The Wire Nail market shows the effect of the determination of the manufacturers not to accept orders which will occupy them later than May 31. Most of the mills are filled up to the extent of their capacity until that time and refuse to quote at all for future delivery. No further announcement has been made in regard to the negotiations between the manufacturers, but it is understood that they are progressing favorably, and that the matter may be consummated very soon. Small lots from store in New York are held at \$1.25.

Advices from Chicago.—It is now a matter of great difficulty to find any Wire Nails for sale by manufacturers at any price. All appear to be completely sold up for May, and they are not yet naming prices for June delivery. Buyers are making inquiries in every direction in the hope of finding somebody with a stock of nails. Jobbers advanced prices last week to \$1.15, and are now naming \$1.25 for small lots from stock, with no concessions for carloads. It is asserted that another advance will be made on or before June 1.

Cut Nails.—The Cut Nail market has a firmer tone and prices are higher. The mills are indisposed to accept orders for future delivery. Small lots from store in New York are held at \$1.10.

Advices from Chicago.—The demand for Cut Nails has been much better, in sympathy with the strength of the Wire Nail market. Everybody is expecting a material advance after June 1. Jobbers quote \$1 for small lots.

Barb Wire.—The Barb Wire market is characterized by a good deal of strength, and prices are higher. The demand is very active and the mills are finding it difficult to supply their customers as promptly as desired.

Advices from Chicago.—A very brisk trade is in progress, with buyers clamoring for deliveries. Mills in this vicinity report their product sold up to July 1. Jobbers are expected to advance their prices very shortly to conform with the higher rate asked by manufacturers.

Chain.—The Chain market is in a perceptibly improved condition. This is a line of goods which immediately feels the effect of any change in the iron market, and it is therefore characterized by a firmer tone. There has been no concerted action among the manufacturers, but on nearly all kinds of Chain advances have been made, and at the same time there

is a disposition on the part of jobbers to place orders early and much more freely than heretofore. The stocks in the hands of manufacturers and the trade are exceptionally light, there having been a general indisposition to carry heavier stocks than necessary in view of the downward tendency of the market for a long time. In view of the demand which is setting in and the small stocks on hand some well informed parties express the opinion that if the business should attain the anticipated volume the trade will find it difficult to get their orders filled promptly.

Rope.—There is considerable activity in the Cordage market, the volume of trade being good. Prices are also firmer, and slight advances have been made.

Copper Tacks and Nails.—We are advised by the Shelton Company, Derby, Conn., that they have withdrawn all outstanding prices for Copper Tacks and Nails. This action is taken in view of the advance in Copper, which requires an advance of about 3 cent per pound in the price of the goods. This line of goods has been selling at close prices and accordingly feels immediately any advance in the cost of the raw material.

Wrought Iron Pipe.—The market for Wrought Iron Pipe is characterized by a much better tone and prices have been advanced 2½ per cent.

M. D. Jones & Co.—The Wire Broome Fly Killer put on the market by M. D. Jones & Co., Boston, Mass., illustrated in our issue of the 18th inst., is sold to the trade at \$1.80 per dozen, subject to a discount of 40 per cent., and at \$12 per gross, net. Their Hose Menders are sold from the following list, which is subject to a discount of 33½ per cent. to the trade:

	Per doz.
1/4 inch.....	\$0.40
1/2 ".....	.....
1 ".....	.....

In lots of not less than one gross a discount of 40 per cent. is allowed.

Manufactured Copper.—In view of the advance in the price of raw material, the New Haven Copper Company, Seymour, Conn., announce the withdrawal of all quotations for Manufactured Copper. Similar action is taken by other manufacturers, and the market is higher and characterized by a firm tone.

Safety Chains.—The manufacturers of Safety Chains have adopted a new list, which bears date May 10, Holmes, Booth & Haydens, Plume & Atwood Mfg. Company, Wallace & Sons, Smith & Egge Mfg. Company and Bridgeport Chain Company unite in adopting this list, which corrects inequalities in the former list. It is subject to a discount of about 60 and 10 and 10 per cent.:

Plumbers' Safety Chains.

No.	Brass.	Nickel.	Silver.
00	\$1.25	\$1.25	\$1.35
0	1.50	1.60	1.70
1	1.85	1.95	1.95
2	2.30	2.40	2.40
3	3.15	3.30	3.30
4	3.65	3.80	3.80

No.	Brass.	Nickel.	Silver.
	Per 100 feet.	Per 100 feet.	Per 100 feet.
00	\$3.60	\$3.70	\$3.70
0	4.30	4.50	4.50
1	5.20	5.50	5.50
2	6.40	6.70	6.70
3	9.00	9.20	9.20
4	10.30	10.60	10.60

Safety Chain.

Same List as Plumbers'.

	Per box list.
000 Safety Chain in Boxes, Brass.....	\$1.15
000 " " Nickel Plated.....	1.25

Plumbers' Safety Chain and Snaps.

Basin Chains.

16 inches long including Snaps.

No.	Brass.	Nickel.	Silver.
00	\$0.95	\$1.10	\$1.10
0	1.00	1.15	1.15
1	1.20	1.35	1.35

Wash Tray Chains.

20 inches long including Snaps.

No.	Brass.	Nickel.	Silver.
0	\$1.25	\$1.40	\$1.40
1	1.40	1.55	1.55
2	1.55	1.70	1.70

Bathtub Chains.

26 inches long including Snaps.

No.	Brass.	Nickel.	Silver.
0	\$1.35	\$1.50	\$1.50
1	1.60	1.75	1.75
2	1.80	1.95	1.95

Brass S-Hooks for Plumbers' Safety Chain.

No.	Gross.	Gross.	Gross.
1/4	\$3.25	\$3.40	\$3.40
1/2	2.75	2.90	2.90
1 1/2	2.50	2.65	2.65
3 1/2	1.50	1.65	1.65
1	2.25	2.40	2.40
2	1.80	1.95	1.95
3	1.50	1.65	1.65
4	1.30	1.45	1.45
5	1.10	1.25	1.25
6	.90	1.05	1.05
7	.85	1.00	1.00

Split Links for Plumbers' Chain.

	Small, per gross.	Large, per gross.	Small, per gross.	Large, per gross.
	\$1.50	1.75	\$1.75	2.00

Glass.—The meeting held in Pittsburgh by the American Window Glass manufacturers resulted in the appointment of a Wage Committee and a general discussion on trade topics. The proposition to form an association did not meet with encouragement, so that nothing is likely to be done in this direction during the present fire. The subject of closing down all Glass plants on June 1 was brought before the meeting, but it did not receive the support of a majority of the manufacturers present. The demand for Glass is fair, but not satisfactory to either the maker or jobber. As far as can be learned the discounts on the new list are being well adhered to. The discounts which went into effect and apply to the new list adopted May 1, 1895, are as follows: Less than 100 boxes, 75 and 5 per cent.; discount; car lots, 75 and 10 per cent., and 1000 boxes, 75 and 10 and 5 per cent. discount. It is understood that large stocks of Plate Glass are held by jobbers throughout the country, so that the demand upon the manufacturers is light. They have not as yet issued a new price-list.

Old Metals.—Considerably more activity prevails in the demand for Old Metals of all kinds and prices show more firmness, especially in the line of Copper and Brass Stock, consequent on the recent rise in rates for raw materials. Scrap Iron of all kinds is in good request, but prices on small lots have not been advanced by dealers in this section. The following quotations represent the rates now paid by dealers in this city for lots of this character:

Heavy Copper.....	75¢
Light and fluted Copper.....	75¢
Heavy Brass.....	5¢
Light Brass.....	4¢
Lead.....	25¢
Zip Lead.....	25¢
No. 1 Pewter.....	95¢
No. 2 Pewter.....	45¢
Wrought Scrap Iron, gross	
ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross
ton.....	7.50 @ 8.00
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.50

Old Rags, Paper, &c.—Business shows more activity, but prices remain at about their former level. Dealers' purchasing prices, New York delivery, rule as follows:

No. 1 White Rags.....	3¢ @ 3 1/2¢
No. 2 White Rags.....	2 1/2¢ @ 2 3/4¢
Mixed Rags.....	1 1/2¢ @ 1 3/4¢

Blues and Sds.....	1¢ @ 1 1/2¢
Hard Sized White Shavings.....	2 1/2¢ @ 2 3/4¢
No. 1 White Book Shavings.....	1 1/2¢ @ 1 3/4¢
No. 2 White Book Shavings.....	1¢ @ 1 1/2¢
Light Book Shavings.....	1¢ @ 1 1/2¢
No. 1 Mixed Shavings.....	3/4¢ @ 1¢
No. 2 Mixed Shavings.....	1/2¢ @ 3/4¢
No. 1 Printed Books.....	1¢ @ 1 1/2¢
Ordinary Mixed Books.....	1/2¢ @ 3/4¢
Newspapers.....	1/4¢ @ 3/4¢
No. 1 Manila Paper.....	2¢ @ 1¢
No. 2 Manila Paper.....	1 1/2¢ @ 1 3/4¢
Bogus Paper.....	1 1/2¢ @ 1 3/4¢
Common Paper.....	1 1/2¢ @ 1 3/4¢
Straw Chips.....	1/4¢ @ 1 1/2¢
Binders' Clippings.....	1/4¢ @ 1 1/2¢
June Butts.....	1 1/2¢ @ 1 3/4¢
No. 1 June Bagging.....	1¢ @ 1 1/2¢
Mixed Bagging.....	3/4¢ @ 1¢
No. 2 Bagging.....	2¢ @ 2 1/2¢
Hemp Twine.....	2¢ @ 2 1/2¢
Manila Rope.....	1 1/2¢ @ 1 3/4¢
June Rope.....	1 1/2¢ @ 1 3/4¢
Mixed Rope.....	1 1/2¢ @ 1 3/4¢

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, 3¢ @ 3 1/2¢	
Rubber Shoes, carloads, delivered at factory, 4 1/2¢	
Rubber Shoes, less than carloads, 4 1/2¢	
White Wringer Rolls, 3¢ @ 3 1/2¢	
White Syringes, 3¢ @ 3 1/2¢	

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THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, June 1, 1895.

DAVID WILLIAMS, - - PUBLISHER.

BUSINESS OFFICES:

NEW YORK.....96-102 Reade Street.
PHILADELPHIA.....220 South Fourth Street.
BOSTON.....146 Franklin Street.
PITTSBURGH.....Room 500 Hamilton Building.
CHICAGO.....59 Dearborn Street cor. Randolph.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....312 The Cuyahogas.

BRITISH AGENCY: The Ironmonger, 42 Cannon Street, London, England.

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Spring Movings.

People whose business takes them to the down town district of New York City must have been struck of late by the unusual number of "May movings" among business men. Trucks loading and unloading office furniture have been in evidence on every block, and the frequency with which "Danger" signs on the sidewalks have necessitated unwilling excursions into the roadway on the part of pedestrians, in order to avoid suspended safes, cannot fail to have produced an impression of exceptional activity in the migration business. In truth, the spring changes of offices in New York this year have been phenomenally numerous. They are, too, specially interesting from the fact that the moves have been almost invariably made out of old fashioned, unimproved business houses into the more commodious and convenient quarters offered by the huge new many storied office buildings which are rising on all sides. There is a marked tendency among the business men of to-day to occupy more luxurious offices, where the grind of hard work can be carried on under more cheerful conditions than were to be obtained in the old, dingy buildings so thickly tenanted a few years ago. Consequently as fast as each new, big business structure is finished its multitudinous offices are filled up by transfers from its more unassuming neighbors. Real estate agents say that there is practically no demand for offices in the old buildings of lower New York. Some of this class on the side streets are not sufficiently occupied to pay taxes. Tenants are leaving them, and they have become anything but remunerative properties.

Changing New York.

As a consequence, these old fashioned buildings are being fast pulled down and on their sites sky scraping modern structures of greatly increased capacity are being put up. Broadway, from

Fulton street down to the Battery, will, it is predicted, soon become one long stretch of tall up-to-date business buildings. Most of the old houses now standing in that district are already doomed and plans are being prepared for their successors. In a few years, those who knew this portion of New York as it was 10 or 15 years ago will hardly recognize it as the same locality. Moreover, this wonderful change is not confined to the lower part of Broadway. The process of transformation is going on all over the city. Churches, hospitals, schools and similar buildings in the lower section are one by one giving way to the needs of business and moving further up town. Hotels, clubs and fashionable residences are doing likewise, and their places are being taken by huge office buildings, such as that now building on the site of the historic old Metropolitan Hotel and Niblo's Garden, on Broadway. Even St. Luke's Hospital, as high up town as Fifty fourth street, has been removed still further north to Morningside Heights, where, with the new buildings of Columbia College and the great Cathedral of St. John the Divine, a magnificent group of buildings is slowly rising. New York, in fine, is fast becoming architecturally a new city, and a far handsomer one.

Art for the Artisan.

All through the various discussions regarding the opening of public libraries and art museums on Sunday there runs an undercurrent of questioning whether, after all, the workman, for whom these advantages are proposed, really and sincerely desires them; whether, in fact, he is seeking and longing for this opportunity to improve himself during the hours which are his own. Certainly the rapid growth in the circulation of many trade papers, the vast increase in the number and decrease in the price of some of the monthly magazines and the great number of low priced books now for sale are evidences that the wealthy and the highly educated are not alone deriving benefit from these changes that place good literature within the reach of all. It is certain that the workman of to-day has within his reach a vast store of knowledge and art that would make envious the scholar of olden time, and it must be to a great degree through his acquaintance with and gradually acquired love for good literature that a better appreciation of art must come. We are not yet done talking about the benefits of the World's Fair in the creation of artistic ideas and ideals in the minds of many to whom art never appealed before. A man is not here

upon earth merely for what he can get out of it, neither should he fall back on the assumption that the world owes him a living. But he can best do his share in his own elevation and in that of those around him by reaching a little outside of his daily routine, by trying to realize and absorb a little of the higher side of life. Thus he is elevated through good books and good pictures. In almost every city the public library offers him freely the one and the art museum the other, or, if not freely, at least at very small expense, while the illustrations in the best class of periodical literature of the day are such as to make no mean substitute for the real paintings and statues, the fine buildings and the beautiful parks a man may long to see.

Much attention has lately been paid by the Treasury to the prevention of fraudulent undervaluation of imported goods. The special service of Treasury agents in Europe, instituted last year, has proved useful in several cases in discovering fraudulent collusion between jobbers and importers. These agents are making exhaustive inquiries in the leading manufacturing cities of Europe, and their reports are carefully examined at the Treasury Department and forwarded to the Board of General Appraisers, at New York, for comparison with the invoice values furnished by the importers and their agents. The effect of this action on the part of the Government is said to have done a great deal in curtailing the amount of frauds on the revenue.

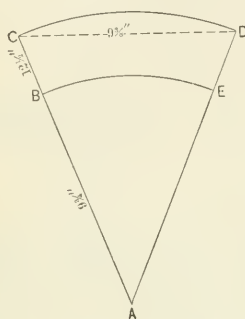
Statistics compiled by an English authority of the railways of the world indicate that the mileage is 406,416, or 1 mile of railway to every 3516 inhabitants. The smallest railway mileage is possessed by Puerto Rico, which has only 11 miles; the largest by the United States, which, with 174,784 miles at the close of 1893, was far ahead of any other country. Next, but at a great interval, comes Germany, with 27,455 miles, followed by France, with 24,018 miles. The United Kingdom comes fourth with 20,325 miles, and Russia fifth with 19,653 miles. In Europe there are altogether 144,380 miles of railway; in North and South America 218,950 miles; in Asia only 23,290 miles, of which 17,768 miles are in British India; in Australia 12,685 miles; and in Africa 7212 miles. The islands of Malta, Jersey and Man have 68 miles; Hawaii has 58 miles, and Persia only 24.

A Philadelphia Insurance institution has undertaken a new field in the insurance of buildings against falls or collapses, and issues special policies to cover this hazard. They include the loss or damage occasioned by the fall of buildings from any cause other than fire, explosions of all kinds, bursting or overflow of water pipes, tornadoes, cyclones, or destruction or damage by mobs, strikers or rioters.

THE LETTER BOX.

Measure Patterns.

From O. T. R., Chicago.—Many years ago I devised a scheme for recording the dimensions of patterns in such a manner that the patterns could be described accurately and with little labor. As an example I will present a table giving the dimensions for a set of measure patterns. The method of obtaining the



Measure Patterns.—Fig. 1.—Method of Obtaining Measure Patterns from Dimensions in the Table.

patterns is shown in Fig. 1 and the table of dimensions is presented below. Let us obtain the pattern for a half-pint measure. Referring to the table,

Table Giving Dimensions for Obtaining Measure Patterns.

	Number of inches		
	A to B	A to C	A to D
1 gill measure.....	24 3/16	26 3/4	6 3/4
1 1/2 pint measure.....	39 1/4	42 5/8	9 5/8
1 pint measure.....	51 5/8	56 1/16	12 1/2
1 quart measure.....	64 5/8	69 1/16	15 1/2
2 quart measure.....	78 1/8	83 1/16	18 1/2
1 gallon measure.....	92 1/8	97 1/16	21 1/2

the distance from A to B is given as 9 3/4 inches. The compasses are set to this measurement, and with A as center the arc B E is struck. With the same center and A to C in the second column as radius, which is 12 1/2 inches, the second arc, C to D, is struck. In practice, these two arcs can be extended either way indefinitely. From any point, as C, draw a line to the center A. Then lay the heel of the square at C and mark off the distance from C to D, as shown in the third column. This distance is 9 3/4 inches, which indicates the point D. From D draw a line to A. If desired the compasses can be set to the distance indicated in the third column, and from C as center an arc struck cutting C D in D. Edges for joining are to be allowed only on C B and D E. The gill measure has an edge turned on the top, while the 1-pint, pint, quart and 2-quart have No. 14 wire in the top. The bottoms of the gill, 1-pint, pint and quart are "snapped" on, while the 2-quart and gallon have the usual double seamed bottoms. The usual al-

lowances for these edges have been made on the patterns.

When making measures it is convenient to have some means of testing their accuracy. As shown in Fig. 2, a

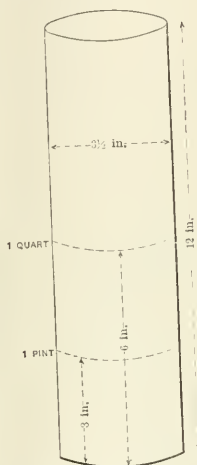


Fig. 2.—Half Gallon, Circumference 11 Inches.

cylinder 3 1/2 inches in diameter and 12 inches high, with a circumference of 11 inches, will hold almost exactly 2 quarts, or 1 gallon. Consequently a cylinder

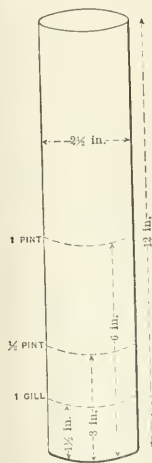


Fig. 3.—Quart, Circumference 7.85 Inches.

of the above dimensions can be marked as shown in the engraving, and used for testing measures above 1 pint; the cylinder being filled twice would equal 1 gallon. If desired, separate cylinders can be made for the quart and pint.

Another cylinder is shown in Fig. 3, holding 1 quart, the excess being about one half of 1 per cent., which is very slight. The cylinder shown in Fig. 3 can be marked as indicated so as to give the pint, 1-pint and gill measure. That the cylinder should hold just the quantity indicated, when made of sheet metal, the material should be cut three and a half times its thickness longer than the indicated circumference. It may be found convenient to allow a small edge for joining and solder the seam. The bottom can be "snapped" on and soldered, as the double seam is rather uncertain in the amount of material it consumes. The top of the testing cylinder can be strengthened by soldering on a circular hoop of locked tin.

Material for Windmill.

From H. A. H., Wellesley, Mass.—In regard to the windmill illustrated in *The Metal Worker* of May 11, I would like to ask how I can obtain the iron flanges, if it is necessary to have them cast, and what kind of wood is best suited for making patterns? Also, in making the fans of sheet iron, what thickness would be desirable?

Answer.—The flanges may be obtained through the pipe fitting trade in Boston or New York, or, what is better, decide how many arms the mill will have, and make a pattern of the flange with arms as a spider, of pine wood. Have it cast and tapped. Gas fitters have the tools for this purpose. It is not necessary to have cast iron flanges; any clever blacksmith can make the spider flange of wrought iron and also a skeleton flange for carrying the mill and tail board. The blades may be made of No. 14 sheet iron.

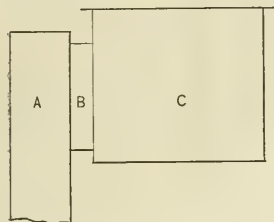
Check Valve on Boiler Supply.

From R. S. J., Hoboken, N. J.—I notice in *The Metal Worker* of May 18 the letter of "H. H.," in answer to an inquiry from "P. S. J.," about a "Kitchen Boiler Below Range," in which he recommends a check valve on the cold water supply to the boiler. He also recommends an expansion pipe from the top of the boiler, with a safety valve attached. In the first place, I see no benefit that could possibly be derived from such an attachment to aid in securing circulation. In the second place, I can see an element of danger and a possibility of damage in the use of a check valve on the boiler supply. If the system was filled with water and there was no fire in the range, a considerable expansion would take place in the water in the system when it became hot. His expansion pipe and safety valve will take care of this expansion when they work; but it is not an uncommon thing for a safety valve to fail to open at the right time, and then a pressure would be exerted on the boiler, water back, piping and faucets, due to the expansion of the water, that

would force something to give way, and in all probability the water back would burst. If the check valve is used at all it would be needed to prevent water from running out of the system or being siphoned out in case the water pressure in the street main should fail to rise and supply the boiler. If it is placed to prevent hot water from backing into the main, a small notch may be filed in the edge of the check valve or a small hole drilled through it. This would prevent any considerable amount of hot water escaping to the main, and would avoid the expense of the safety valve and expansion pipe, as the expansion would find vent through the notch or hole. His first suggestion would be of far more use to "P. S. J.," and as the top of the boiler is only 18 inches below the water back, it is quite probable that a circulation of water will follow such a method of piping.

A Second Story Register Box.

From M. W., Boston.—The usual construction of the register box used on the second floor of a furnace stack presents a great deal of friction and



A Second Story Register Box.—Fig. 1.—The Usual Construction.

materially reduces the flow of air to the room to be heated. Sometimes just enough obstruction is presented to cause a failure to heat. The accompanying sketches may start some aspiring furnaceman in the right direction.

In Fig. 1 let A represent the stack, B the connecting collar and C the floor register box as usually constructed for

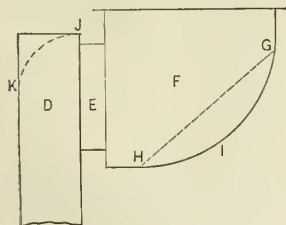


Fig. 2.—Improved Construction.

the second story. The warm air strikes against the top of stack A, and after being abruptly stopped passes through the collar B into the box C. At this point more confusion arises, as there is no guiding star to indicate that the air should pass upward. The furnaceman depends upon the air to find its way through the register, but does not assist it in any way other than by providing pipes for its passage. If the stack D had a curved top, as shown by J K in Fig. 2, the warm air would be deflected through the collar D. The opposite side of the register box being curved, as indicated by G I H, the air

would be deflected through the register. Perhaps the same result would be obtained by having the side made on an angle, as indicated by the dotted line H G.

Milky Water from Boiler.

From A. J., Wilkes-Barre, Pa.—I presume that when the water mentioned by "H. D. T." in *The Metal Worker* of May 25 has remained in a vessel for a few minutes it becomes clear and transparent. If my supposition is correct the milky appearance is due to the water being full of small globules of steam. This condition is seldom found except with heavy firing or with a large water back when but little water has been used for a time. This enables all of the water in the boiler to be at very nearly an even temperature. The boiler being subject to a pressure from the city mains, sometimes as much as 80 pounds, enables the water to be heated to several degrees above the boiling point, and immediately on opening the faucet this pressure is very materially reduced, enabling the water in the boiler and piping to expand into steam. It runs in this condition with the milky appearance mentioned, and as all of the steam cannot escape instantly some will be carried to the vessel and as it gradually passes off the water will become clear.

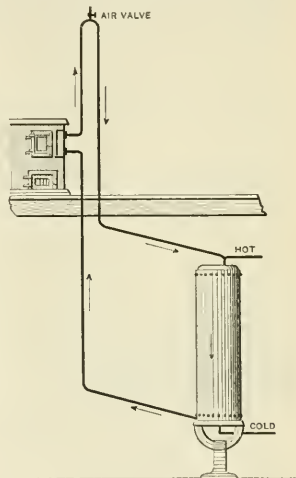
Furnace Heating with a Fan.

From MANUFACTURER, Pa.—I have read the article in *The Metal Worker* of May 25 on furnace heating with a fan with considerable interest. It has been customary with our house to keep in close touch with the details of furnace setting, and I am free to admit that the system described is a new departure, inasmuch as experiments in this direction in the past have not been duplicated. The thoughts which have come to me are, first, that all important and ever present feature of cost. Furnacemen already know that it is very difficult to get a price that is required for a really good job of furnace work after the methods which are in general use; and it strikes me that it would be no small job in many cases to induce a school board, church committee, county commissioner or other body in charge of the erection of a public building to go to the expense of an electric motor, a line of shafting and a fan. It is very difficult to induce the "powers that be" to provide an adequate means of ventilation; and it is not as thoroughly recognized as it should be that successful furnace heating depends on getting the air out of the building after it has lost some of its original warmth and has deteriorated in quality, so as to make room for fresher air laden with heat. I heartily commend the system shown, and hope it will be used widely. The only criticisms that could be offered to it are in reference to its details and not to the principle of its operation or the beneficial results which are sure to follow its use. Grouping the furnaces in one spot is new to the furnaceman; and the dropping of an air pipe 15 feet and then running the pipe nearly 100 feet before the last register is reached would be impossible without the use of a fan, and then, unless the pipes are covered, so much piping must lose considerable heat. I can therefore see no good reason why the furnaces cannot be located nearer the work to be performed, the cold air supply ducts branching from the fan chamber and running to the furnaces wherever they may be located. It would be interesting to learn the amount of coal that is used in heating

this building for the Sunday service so that a comparison can be made of the amount used in the heating of similar buildings with hot air furnaces set in the customary manner. From the size of the fire pot and description of the furnace as used in this plant, it is more than probable that two of these furnaces would heat the building on the old plan without difficulty; and the cost of such a plant would be a great deal less than that described. Of course, each reader of *The Metal Worker* can estimate the cost of the plant given, but it would add to the interest of the article had that item been supplied. I think all manufacturers have felt more or less the intrusion of steam and hot water in their field. As a rule, these plants for heating cost very much more than a furnace heating plant, and it seems reasonable to suppose that if the price would be paid for the steam heating plant it is only necessary to explain the benefits of the fan system to secure a figure which will enable its installation.

Kitchen Boiler Below Range.

From W. T. I., Warren, Ohio.—In *The Metal Worker* of May 11 "P. S. J." asks for a plan to cause a circulation



Kitchen Boiler Below Range.

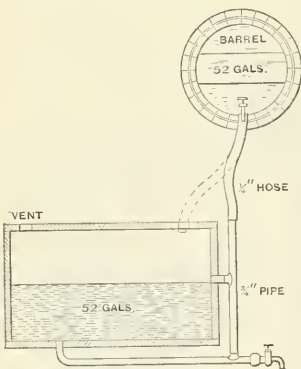
of water through a range and water tank, and I submit herewith a sketch which will show how to produce the desired result. The pipe which is connected to the upper opening in the water back should extend toward the ceiling above the top of the range about 4 feet or more, if there is room, and then connect to a return bend, and at the highest part of the return bend put in an air valve, to let out the air that will accumulate in the pipes and prevent them from becoming air bound. As the water becomes heated it rises, and the pipe toward the ceiling enables it to continue rising until it reaches the return bend, when it begins to cool and fall, and if there are no traps it will continue to fall till it reaches the bottom of the tank. The cooler water goes in at the lower opening of the water back because the hot water has gone out at the top and the circulation is complete. Care must be taken to avoid all dead levels within the circuit. This is simply like a case in hot water house heating where the radiator is situated below the fire box. A case that we have in our own house gives excellent satisfaction.

How Shall the Main Be Run?

From S. W. A., Omaha, Neb.—In answer to the inquiry of "S. F.," New Jersey, in *The Metal Worker* of May 18, as to how the main shall be run, the only feasible way I can conceive in connection with the diagram shown is to tap the boiler 2 feet from the bottom of the cellar, provided the boiler is so constructed that the water will be hot at that point. This will leave space below the flow pipe, which is to be connected with the opening tapped, so that the return pipe can be brought back and connected with the boiler at a point lower than the flow pipe. This will allow 6 inches raise to 100 feet for both the flow and return mains. The size of the mains should be $1\frac{1}{2}$ inches, and they should be covered.

Filling a Tank.

From A. E. W., New Britain, Conn.—We have a 52-gallon range boiler connected as shown in the accompanying sketch, which is used for storing gasoline. It is filled by a rubber hose connected to a barrel raised about a foot above the tank. I am told that the tank will not fill as quickly when connected as shown by the solid lines as it will if connected as shown by the dotted lines. It is claimed that it will



Filling a Tank.

fill quickly until the level in the tank shown by the dotted portion is reached; then it will fill slower, as the inflowing oil has to overcome the weight of oil against it. I claim that it fills just as fast connected as shown by the solid lines less the friction, providing the vent is equal in both cases. Will you please settle this dispute?

Answer.—The head or height of the fluid between the supply level and the tank level would govern the rapidity of the flow, less the friction of the pipe; and the point at which the supply enters the tank is practically immaterial.

Connecting Drain Pipe.

From M. S. E., Westminster, Md.—Will *The Metal Worker* please inform me whether Portland cement is the best cement to use for laying terra cotta sewer pipe and how it should be mixed? How are these tile generally fixed against the wall so that water-scotting may be placed around it, and how are the pipes held in position until the cement has set?

Answer.—Any first-class hydraulic cement may be used for connecting

terra cotta sewer pipes. The cement should be mixed with about the same bulk of clean sharp sand, although if good Portland cement is used a slightly larger proportion of sand may be added. Only such quantity of the sand and cement should be wetted as is needed for immediate use, and no more water should be used than will make the cement plastic. If in use the cement begins to harden it is best to discard it and mix a new batch, as it is liable to crack in setting if it is wetted down thin again and used. Whether the pipe is placed vertically or placed horizontally, the connection should not be made until the pipe is firmly supported. When used against an upright wall a good job is made by drilling a hole in the wall with a chisel and driving a wooden plug into it. Large wrought iron pipe hooks are then driven into the plug and bent around the pipe tightly to hold it securely in place. Sometimes a hole is drilled in the wall on each side of the pipe, a band being placed over it, and a hole provided in each end of the band for fastening to the wooden plug by means of a large spike. When laid horizontally the bell end of the pipe should always rest on a firm foundation either of well tamped earth or stone. In order to prevent the spigot end of the pipe lying flat against the bell at the bottom it should be supported so that there will be an equal space all around the pipe in the bell for the cement.

The H. B. Smith Company, 133, 135, 137 Centre street, New York, have completed the annual refreshing of their sample room, and a handsome crimson Brussels carpet now covers a platform in the center of the room, on which are arranged the various heights of their line of Imperial, Champion, Royal, Union and Reed radiators, handsomely ornamented. On one side of their showroom a line of their popular Cottage boilers is shown, commencing with 00 and going up to the largest size. Some are shown for hot water and others are arranged for steam. All are painted white and alternately decorated with bands of gilt and aluminum bronze. At the back of the sample room three sizes of the Mills sectional steam boilers are shown. At the other side of the building two sizes each of the Mercer and Gold boilers are shown painted in different colors and ornamented with gilt. The goods make a handsome appearance, which is said by the company only to be surpassed by the handsome work they perform when in operation.

The Orford Copper Company of Bergenport, N. J., are now making electrolytic nickel of exceptional purity. The metal is nearly chemically pure.

A report of the Canadian Minister of Marine and Fisheries, lately laid before the Dominion Parliament, shows that the value of registered tonnage of Canadian vessels is \$26,088,720. Last year 326 vessels, having a tonnage of 21,243, were built in Canada. There are now on the registry books of the Dominion 7245 vessels, representing 869,462 tons.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

H. B. MIDDLEBROOK, Bridgeport, Conn., has the contract for the plumbing in the new cottage of James A. Wilson.

The New Britain, Conn., School Board have accepted plans for a three-story school building which is to be 126 x 168 feet. It will have a system of heating and ventilation.

OLDS & WHIFFLE, Hartford, Conn., have the contract for plumbing 12 new bath-rooms at the Retreat for the Insane.

THE CONTRACT for the heating apparatus for the Federal Building at New Haven, Conn, has been awarded to the James Curran Mfg. Company of New York City, at \$4150.

EDWARD WHITFIELD of Greensburg, Pa., has the contract for the plumbing and hot water heating for the residence of J. Peterson, Ligonier.

SEALED PROPOSALS will be received at the office of the Supervising Architect at Washington, D. C., until June 12 for work including the plumbing of the United States Post Office Building at Burlington, Iowa. Drawings and specifications may be obtained from the Supervising Architect at Washington or from the Superintendent at Burlington.

THE KERNAN FURNACE COMPANY of Utica, N. Y., have been awarded the contract for heating and ventilating the new Verona Union School Building.

THE FULLER & WARREN COMPANY, 157 and 159 Lake Street, Chicago, have the contract for warm air heating, ventilating and furnishing sanitary cremating closets for the ten-room High School at Goshen, Ind.

J. CARR, Troy, N. J., has the contract for the heating and plumbing for the Roy mansion.

THE BOARD OF ALDERMEN of Malden, Mass., have appropriated \$,000 for improving the heating, ventilating and sanitary condition of Converse, Emerson and Judson schools.

THE CONTRACT for the heating and ventilating apparatus for the Public Building at Lima, Ohio, was awarded to Whitehead & Lewis of Detroit at their bid of \$2600.

GODFREY & ALLEN are doing the plumbing and steam fitting in the new buildings of G. E. Webster and Lewis Fortier.

THE PLUMBING FIRM of D. Ahern & Son of Fond du Lac, Wis., have been awarded the contract for an extensive job in the leading hotel at Oconto, and J. F. Ahern is now in Oconto superintending the work.

SHANNON & McNAMARA, Denver, Col., have the contract for refitting the plumbing in the fire station at Twenty-sixth and Lincoln avenues.

BLANCHARD & BRADEEN, Old Town, Maine, are busy plumbing the new Perry Building. They are also doing work for Wing & Engel.

LEE BROS., Concord, N. H., have been awarded the contract for plumbing the new school building.

CLAYTON & MILLER, 477 West North avenue, Chicago, have the contract for the plumbing and drainage in the apartment building of William Feggars, 249 West Division street.

BYRNE & RYAN, 254 Forty-third street, Chicago, are to do the plumbing and drainage in the four apartment buildings of Duplessy Bros., Prairie avenue and Forty-sixth street.

J. C. CEDERHOLM, 87 West Ohio street, Chicago, has the contract for the plumbing and drainage in the apartment building of Reynertson Bros., 325 Hermitage avenue.

CHARLES UHER, 524 West Eighteenth street, Chicago, is to do the plumbing and drainage in the flat building of H. Johnson, 1000 Fifty-second street.

FRANK MEEK, 485 West Eighteenth street, Chicago, is to do the plumbing and drainage in the flat building of James Silaby, 1059 Kedzie avenue.

HENRY & CLARK, 5738 Wabash avenue, Chicago, have the contract for the plumbing

ing and drainage in the flat building of C. Silkenat, 5411 Armour avenue.

J. J. CURTIN, 4929 South Ashland avenue, Chicago, is to do the plumbing and drainage in the flat building of C. Kaske, 4828 Diager street.

WILSON & WILK, 3907 Cottage Grove avenue, Chicago, have the contract for the plumbing and drainage in the residence of W. Spenglers, Ewing place.

E. L. FRANSTED, 443 West Randolph street, Chicago, is to do the plumbing and drainage in the flat building of O. Tuft, West Adams and Forty-fourth streets.

MORRIS BROS., 3442 South Halsted street, Chicago, are to do the plumbing and drainage in the flat building of George Harper, 8506 Parnell avenue.

P. H. GUNDERMANN, 889 North Halsted street, Chicago, has the contract for the plumbing and drainage in the factory building of F. Diesel, Fortieth street and Stewart avenue.

A. C. SMITH & Co. of West Newburg, N. Y., received the contract for the new plumbing work of the United States Hotel, consisting of modern bathrooms, steam cooking utensils, French ranges, power boiler and laundry work, all of which, when completed, will be a model plant.

THE CONTRACT for plumbing the Summit House, on Mt. Washington, has been awarded to the C. W. Williams Company, Concord, N. H.

P. J. MURPHY of Newport, R. I., has taken an extensive contract at the Conant Park Hotel. The house is to be fitted with new plumbing, porcelain baths, marble basins, siphon water closets, with nickel plated pipes.

THE SPERL HEATER COMPANY of Carbondale, Pa., are putting steam heating apparatus in the new building being erected by the Odd Fellows.

SEALED PROPOSALS will be received by W. A. Scherff, secretary of the Board of Directors of the Independent School District of Fort Madison, Iowa, until 2 o'clock p.m. June 1, 1895, for heating and ventilating the two school buildings in the west part of the said city, known as the Union avenue and Richardson Building.

W. B. CASSEN, Meriden, Conn., has the contract to do the plumbing in the new \$5000 building of John W. Coe.

THE WALKER & PRATT FIRM, COMPANY, Boston, Mass., have been given the contract for heating and ventilating Mrs. E. I. Brown's block. The indirect heating system will be used.

THE HARTFORD LIFE & ANNUITY INSURANCE COMPANY, Hartford, Conn., will use either steam or hot water heating in their new five-story building and will have a fine system of plumbing.

GRISWOLD, RICHMOND, GLOCK & Co., Meriden, Conn., have the contract for heating in the new residence for F. W. Thompson and H. A. Wood.

T. P. LEACH, Middletown, Conn., is to erect a fine new residence to have a first-class system of heating and plumbing.

F. C. WEYANT, New Britain, Conn., has the contract for the plumbing in the new building being erected by A. A. Lyman.

NOTRE DAME CHURCH, at Pittsfield, Mass., is to erect a new building, to be 133 x 76 feet. It will have a heating system.

TWO NEW SCHOOLHOUSES are to be built at Pittsfield, Mass., one to cost \$25,000 and the other \$32,000, each to have a system of heating and ventilation.

THE CONTRACT has been awarded for a \$45,000 high school building at Northampton, Mass. The contracts for the heating, ventilation and plumbing have not yet been awarded.

SEALED PROPOSALS addressed to Ira C. Miles, Edwards, N. Y., until June 8, 1895, after that date at Canton, N. Y., will be received by the Board of Supervisors of St. Lawrence County until June 11, 1895, for the construction of a system of steam heating in the St. Lawrence County Poor House at Canton, N. Y.

THE BROADWAY FIRM of A. C. Smith & Co., Newburgh, N. Y., received the contract for the steam fitting at the United States Hotel. The firm recently received

the plumbing contract for the new annex, the figure being about \$2200. The steam heating contract is for the entire building and is about one-half as much again as the plumbing contract.

THE board of public works of Pittsfield, Mass., awarded the contract for heating the new addition to the city hall to Robbins & Gamwell.

LOFTUS & Co., North Adams, Mass., have the contract for heating the Cranesville School at \$2200.

MRS. BENJAMIN WOODSIDE is erecting a \$5000 cottage at Berry's Mills, Georgetown, Maine, and J. A. Winslow & Son are doing the plumbing.

R. T. FORD, Rochester, N. Y., has been awarded by the City Property Committee of the Common Council of Rochester the contract for the plumbing of the City Hall building. The firm's bid was \$1330.

THE LOCKPORT DISTRICT STEAM COMPANY, Lockport, have been awarded a contract to put in a steam heating plant at Danville, Ill. Price, \$20,000.

BIDS for the heating apparatus for the Government Building at Rockford, Ill., were opened at Washington, and the Charles E. King Heating Company of Milwaukee, who made the lowest bid, \$2375, will be awarded the contract.

THE CONTRACT for heating the McManus Building at Davenport, Ia., has been awarded to the Davenport Steam Heating Company and the plumbing contract to Griffith & Diedrichsen, both of Davenport.

THE CONTRACT for heating the city building of Scranton, Pa., was awarded to the Economy Steam Heat Company. The contract price per annum is \$1337. W. P. Connell & Son received the contract for changing the heating system of the city hall for \$664.

GODFREY & ALLEN, Oldtown, Maine, have been doing quite an extensive job of plumbing at the residence of S. C. Higgins, at Costigan, and this firm have also been plumbing at the Odd Fellows' Block.

A. M. MAYPOLE, 816 Van Buren street, Chicago, is to do the plumbing and drainage in the residence of C. Vibert, 1189 Flournoy street.

M. G. BROOKS, 1111 West Harrison street, Chicago, has the contract for the plumbing and drainage in the three flat buildings of S. A. Kent, Wabash avenue and Twentieth street.

THE J. F. ALLES PLUMBING COMPANY, 233 Lincoln avenue, Chicago, are to do the plumbing and drainage in the flat building of G. Becken, 1148 North Halsted street.

M. J. CORBOY, 78 Dearborn street, Chicago, has the contract for the plumbing and drainage in the flat building of E. F. Ingalls, Grand Boulevard.

T. E. O'MALLEY, 215 Wells street, Chicago, is to do the plumbing and drainage in the two apartment buildings of Sullivan & Daley, 143 and 145 Sedgwick street.

HENRY BAUER, 232 North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of N. Lukas, Eugenia, near Sedgwick street.

SMITH & DORNEY, 1046 Northwestern avenue, Chicago, have the contract for the plumbing and drainage in the residence of M. Pregier, Myrtle avenue, near Garden street.

J. W. PLUMSTED, 5090 Atlantic street, Chicago, has the contract for the plumbing and drainage in the flat building of M. Shon, 4217 Union avenue.

J. F. KENDRICK, 3934 State street, Chicago, is to do the plumbing and drainage in the apartment building of J. R. Taylor, Fifth street and Calumet avenue.

FARRELL BROS., Mt. Carmel, Pa.; James Kane, Doylestown, Pa., and Charles E. Bond, Newark, N. J., are installing heating plants in which the Volunteer and All Right boilers will be used.

THE building to be erected at Duluth, Minn., on the site of the old Board of Trade will be known as the "Lonsdale." N. C. Harvey secured the contract for the plumbing at about \$10,000.

THE asylum committee of supervisors at Chippewa, Wis., let the contract for the heating apparatus of the new asylum to J. P. Fox of Eau Claire, at \$4495.

An East Indian Trade School.

It is interesting to note that the movement in favor of establishing trade schools for the benefit of the native craftsmen of India, to which reference was made in a recent issue of *The Metal Worker*, has already borne fruit. In a late number of the *Indian Textile Journal* of Bombay an account is given of the annual presentation of prizes at the Victoria Jubilee Technical Institute, in that city, at which the announcement was made that a trade school department was to be added to the work of the institute. This establishment was founded and endowed in 1887, as a memorial of the fiftieth year of the reign of the Empress of India, by Sir Dinslaw Petit, a wealthy and beneficent Parsee merchant of Bombay, for the purpose of giving a technical education to the young natives of the city. Now the original donor has given a further sum of 40,000 rupees in order to provide a school for the teaching of trades. Enameling and working in sheet metals are proposed to be taught, as well as plumbing, at the outset, and it is expected that further trades will be added if the school proves successful.

Commenting editorially on the new departure, the *Textile Journal* has the following remarks: "Instruction in the working of tin plate and sheet metal is such a palpable necessity that it almost recommends itself. Ordinary tin plate working has been taken in hand in India by men of no trade at all, and the work has been degraded to the very lowest point. Such tools as are to be found in the smallest tinker's shop in Europe are of the rarest occurrence here. In work on sheet iron, copper or brass, although the Indian artificer is very clever at hammering and brazing, he has still to learn to work to exact dimensions. We therefore feel sure that instruction in this class of work may be added with advantage to the list of subjects taught at the institute. With regard to plumbing we cordially echo the appeal of Mr. Acworth. The need for instruction in plumbing is urgent, and the course of instruction, if well carried out, will prove one of the most interesting of all, calling as it does upon every faculty of the student, and affording much scope for both skill and judgment, for it includes a very large portion of the art of making joints with a great variety of materials."

The proposal to teach enameling does not find favor with the journal quoted, which argues that instruction in this branch of the trade would involve a heavy outlay with little or no prospective benefit. There is no demand, it says, for enameled cooking ware in India, where the native cooks are in the habit of placing their empty cooking pots on the fire and when they are heated to a temperature of 300° to 400° of throwing fat or water into them. No enamel or tinned lining would stand such treatment.

The Canadian Bridge Company have secured a large contract from the Atlantic & Lake Superior Railroad for the construction of all the steel bridges on the unfinished portion of the line between Chaudiere Junction and Yamaska. These are somewhat numerous, including one of 1900 feet in length over the St. Francis River, another 600 feet in length over the Nicolet River, and one of 1300 feet at Becancour. Besides these, there are bridges over the Gentilly River, the DuChene River and the Chaudiere River. The contract involves over \$250,000.

ROOFING AND CORNICE.

Conductor Heads.—IV.

BY CORNICE WORKER.

Patterns for a Circular Leader Head.

In Fig. 25 is shown the plan and elevation required for obtaining the patterns for a circular leader head. Let A B C D represent the front elevation. Draw the center line E X', extending it indefinitely, as shown by E K. At right angles to E K draw the line X Y, intersecting the center line E K at M.

the back must be obtained. For this pattern proceed as follows: Space the profile B D in front elevation, Fig. 25, into any convenient number of parts, as shown by the small figures 1, 2, 3, 4, 5, 6, 7 and 8.

Now at right angles to the center line E K, Fig. 25, draw lines from the points of intersections on the profile B D, as shown; from these same points in the profile B D, Fig. 25, drop lines parallel to the center line E K, until they intersect the center line X Y in plan. Then with M in plan as center

by 2, 3, 4, 5, 6, 5, 4, 3, 2, will be the required pattern for the back of the head. Laps are allowed for soldering, as shown by the dotted lines. Before obtaining the patterns for the flaring strips draw a profile, as shown in Fig. 27, which shows the method of constructing the flanges. To develop the pattern for the flaring strip, shown from 2 to 3 in the profile B D, front elevation, Fig. 25, produce the line 2 3 until it intersects the center line E X', as shown at E. Now, with A, Fig. 28, as center and E 3 of the elevation as

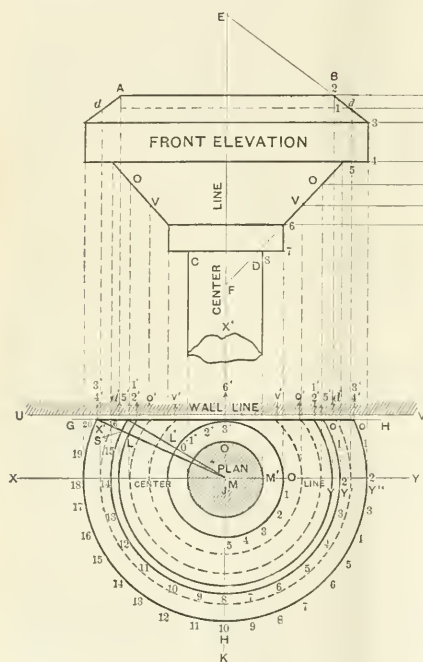


Fig. 25.—Plan and Elevation of a Plain Round Leader Head.

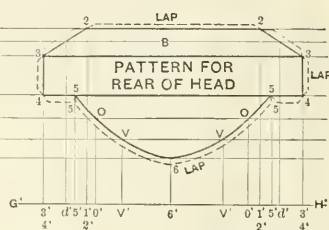


Fig. 26.—Pattern of Rear of Leader Head.

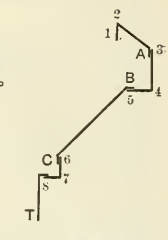


Fig. 27.—Method of Constructing Laps or Flanges.

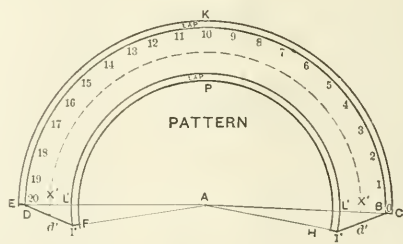


Fig. 28.—Pattern for Flare Shown by 2 3 in Elevation, Fig. 25.

CONDUCTOR HEADS.—PATTERNS FOR A CIRCULAR HEAD.

With M as center strike the circle J, representing the plan of the pipe. From the numbered bands in the profile B D in elevation drop lines parallel to E K, intersecting the line X Y at points Y', Y'', O and M'. With M in the plan as center, and with radii M M', M O, M Y, M Y' and M Y'' describe arcs, as shown, intersecting the back of head G H, which lies against the wall line U, V, thus completing the plan of the head. It should be understood that the front elevation in Fig. 25 indicates the section through X Y in plan, and would not be the pattern for the back of the head shown by G H. The length of G H being less than a section on X Y, a special pattern for

and with the various intersections on the center line X Y as radii describe arcs intersecting the line G H in plan. It will be noticed that the intersections obtained on the line G H in plan are numbered to correspond with those on the profile B D in elevation. Referring to Fig. 26, draw any line, as G' H', upon which transfer the intersections obtained on the line G H in plan in Fig. 25, as shown by the small figures in Fig. 26.

At right angles to G' H', Fig. 26, and from the points indicated by the small figures, draw lines upward, intersecting lines of similar numbers drawn from the profile B D. A line traced through these intersections, as shown

radius, describe the arc D B, Fig. 28. Now divide the arc Y', shown in plan, Fig. 25, corresponding to the point 3 in elevation, into an equal number of parts, as indicated by the small figures 0 to 20. Transfer these 20 divisions to the arc D B, Fig. 28. Draw a line from D to the center A and from A to B, as shown. Now, with E 2 of the elevation, Fig. 25, as radius, and A of Fig. 28 as center, strike an arc indefinitely. From the point 20 in plan draw a line to the center M, intersecting the arc Y, as shown at L. Then will the distance from L to 1' 2' in plan indicate the distance of its intersection with the flat back from the point L in the plan. Transfer the distance L 2' 1' to the pat-

tern in Fig. 28, as shown on either side from L' to 1'. Draw lines from D to 1' and from 1' to the center A, from A to 1' and from 1' to B.

Set off the widths of the flanges 2, 1 and A of Fig. 27 upon the lines A D and A B extended upon either side of the pattern, Fig. 28, as shown. With A E and A F in Fig. 28 as radii, describe the arcs, as shown. Then will H, 1', B, C, K, E, D, 1', F, P be the pattern for the flaring strip shown in elevation from 2 to 3. For the pattern of the flaring strip shown in front elevation by 5 6, the same method is employed. Produce the line 5 6, Fig. 25, until it intersects the center line at F. Now with A, Fig. 29, as center, and F 5 of the front elevation as radius, describe the arc C B. Divide the arc Y', shown in the plan, Fig. 25, corresponding to the bend 5 in the front elevation, into an equal number of parts,

for the fillet shown by 3 4 5 in the front elevation, Fig. 25. There are two ways of obtaining the pattern when the head is made by hand. The first and long way is to trace off that part of the circle shown in plan by 0, 1, 20, 16, 8, 0 upon a piece of metal, and cut out with the shears and solder upon the outside circle a strip of metal as high as shown from 3 to 4 in front elevation. This method I would not advise, as there is too much waste of metal in cutting the circle. The better and stronger way is shown in Fig. 30. Upon any line, as A B, lay off the stretchout of the arc Y', Fig. 25, corresponding to the bends 3 and 4 in elevation, as shown by the small figures from 20 to 0. At right angles to A B, on either side, draw the lines B F and A E, upon which lay off the width of the fillet and its under side, 3 4 5, Fig. 27, as shown by 20 C E and O D F. Draw a line

and A. The pattern for the flare, 2 3 is shown in Fig. 28. Roll this pattern upon the blowhorn stake until it has the required curve indicated by the arc Y', Fig. 25. Now turn the two laps or flanges shown in the pattern, Fig. 28, in the turning machine to the required angle shown by 1 and A, Fig. 27. If the turning machine does not bring the flanges to their proper angles place them upon the bottom stake and with the use of the mallet bring them to their proper angles. The pattern shown in Fig. 29 is formed in the same manner as explained above. The laps on the pattern for rear of head, shown by the dotted lines in Fig. 26, can be bent to the required angle by means of the flat plier or upon the hatchet stake with the use of a mallet.

The pattern for the square fillet shown in Fig. 30 is bent upon the line C D. The bend can either be made in

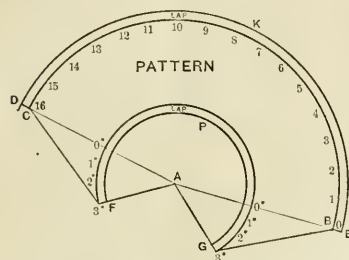


Fig. 29.—Pattern for Flare Shown by 5 6 in the Elevation, Fig. 25.

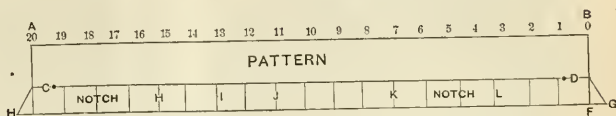


Fig. 30.—Pattern for Fillet Shown in Elevation, Fig. 25, by 3 4 5.



Fig. 32.—Method of Placing a Pro file Inside of the Notched Fillets so as to Obtain a True Circle.

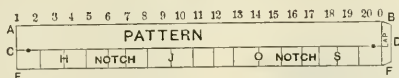


Fig. 31.—Pattern for Fillet Represented in Elevation, Fig. 25, by 6 7 8.

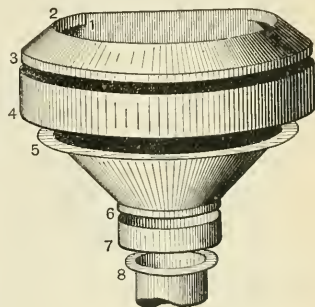


Fig. 33.—The Leader Head Ready to be Soldered Together.

CONDUCTOR HEADS.—PATTERNS FOR A CIRCULAR HEAD.

as shown from 0 to 16. Transfer these 16 divisions to the arc C B, Fig. 29, as shown. Draw a line from C to the center A, and from A to B. Now with A, Fig. 29, as center, and F 6 of the front elevation, Fig. 25, as radius, describe the arc 3' to 3'. From the point 16 in plan draw a line to the center M, as shown by the line 16 M, intersecting the circle O at L' of the plan. As the circle O is not intersected by the flat back, the distance from L' to 3' must be added to the inner circle of the pattern to make it complete. Divide this portion of the circle into any number of parts, shown by 0', 1', 2' and 3', and transfer these spaces upon the arc 3' 3' shown in pattern, Fig. 29, commencing on the line D A and A B at points 0' 0', as shown from 0' to 3' on either side. Draw a line from 3' to the center point A and from A to 3'. Allow the flanges, shown by B and C, Fig. 27, upon the pattern by D E and F G, in the same manner as explained in connection with Fig. 28. Then will D, C, 3', F, P, G, 3', B, E, K represent the pattern for the flare, shown in the front elevation, Fig. 25, from 5 to 6.

The next step is to obtain the pattern

from C to D and from E to F, extending the line E F in the direction of H and G. Referring to the plan, Fig. 25, the line 20 M intersects the arc Y', as shown at S. Then will the distance S 5' in plan represent the increased distance on the line 5 necessary to meet the flat back. Transfer the distance S 5' to each end of the line E F, Fig. 30, as shown at H and G. Draw the lines H C and G D. Then will A B G H represent the pattern for the square fillet shown in the front elevation, Fig. 25, by 3 4 5. This method gives no waste whatever, as the pattern is straight, the lower portion being notched, as shown in the pattern. The dots shown on the line C D, Fig. 30, indicate the bend 4 shown in elevation.

Fig. 31 shows the pattern for the square fillet 6 7 8 of Fig. 25. The same rule is followed as explained in connection with Fig. 30. This completes the entire set of patterns required for the circular leader head shown in Fig. 25.

Forming the Leader Head.

Referring to the section shown in Fig. 27, it will be seen that the top flare, 2 3, has two laps or flanges shown by 1

the folder, the cornice brake, or by means of the hatchet stake and mallet. The notches, indicated by I, J, K, &c., shown in the pattern, Fig. 30, are cut with the shears after the bend is made. A mistake often made by workmen is to first roll this pattern to its required circle, then notch with the shears and bend over with the flat pliers, thereby failing to obtain a sharp corner. The better plan is to make the bend first, then notch the flanges required, letting them overlap each other as the bending is done. For forming the pattern shown in Fig. 31 the same method is employed. In Fig. 32 is shown the method of placing a template inside of the notched fillets so as to obtain a true circle. As will be noticed by referring to the figure, A represents a template cut from an old piece of tin or other metal corresponding in shape to the circle required. B represents the notched fillets drawn around the circle A. Draw the fillet B, Fig. 32, tightly around the template A and solder the seam. After the seam is soldered the notches are flattened down well with a small hammer and all of the notches soldered, after which the old tin bottom A is slightly tapped with the hammer and will fall out. This

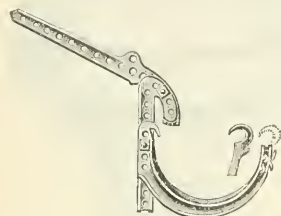
leaves the fillet completed, giving it stiffness and the shape being a true circle.

Soldering or Joining the Head.

In Fig. 33 is shown the leader head in separate parts ready for joining or soldering together. B represents the flat back shown by B in Fig. 26. As will be noticed by referring to Figs. 27 and 33, similar bends are indicated by similar figures. Therefore, the flare shown by 2 and 3 in Fig. 33 is the same as shown by 2 3 in Fig. 27, and is joined to the fillet 3 4 5, Fig. 27, corresponding to the fillet 4 in Fig. 33. Likewise the flare shown by 5 and 6, Fig. 33, corresponds to the flare shown in Fig. 27 by 5 and 6 or B and C. The flare 5 6 being joined to the fillets 3, 4, 5 and 6, 7 and 8, shown in Fig. 27, corresponding to the two fillets shown by 4 and 7 in Fig. 33. The tube 8 shown in Fig. 33 corresponds to T, Fig. 27, and is joined to the fillet 6, 7 and 8, Fig. 27, corresponding to the fillet 7, Fig. 33. Care should be taken to have all flanges placed on the inside of the head, as shown in Fig. 27, and solder water tight.

Berger Gutter Hangers.

The accompanying illustrations show some new gutter hangers which Berger Bros., 231 and 237 Arch street, Phila-



Berger Gutter Hangers —Fig. 1.—Hanger No. 28.

delphia, are putting on the market. These hangers are designed to allow of the hanging of a gutter to almost any kind of eave. Tinner have heretofore, it is claimed, had difficulty in providing a suitable hanger in cases where slates were laid, or where the eaves were narrow or had clapboard moldings on them, preventing the use of the ordinary hangers. The new hangers, it is stated, will save a tinner the valuable time often consumed in making an examination of a building for the purpose of determining upon a method for

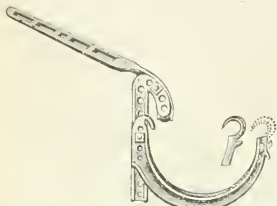


Fig. 2.—Hanger No. 27.

fastening gutters to eaves, owners not always being able to describe the finish of the eaves or select a suitable hanger and frequently objecting to the suspension of the gutter from the shingles. As will be seen, a tinner having a small assortment of these hangers can hang a

gutter to almost any kind of eave. In the case of an exposed rafter, hanger No. 28, shown in Fig. 1, is used, being simply nailed to its side. In a case where there is no rafter or cornice, hanger No. 27, Fig. 2, will slip up under the shingles. Where a roof is already slated and finished with mold-

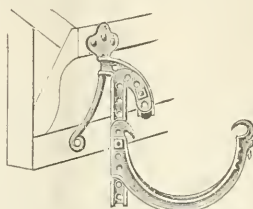


Fig. 3.—Hanger No. 30.

ings of various shapes, whether steep pitch or not, large or small, hanger No. 30, shown in Fig. 3, will suit. It is nailed at the top and bottom, and the lower brace can be bent when a better footing is desired. For metal roofs and awnings hanger No. 34, shown in Fig. 4, is especially suited. It is to be clamped under the sheets and requires only one bolt through the top. Not being exposed it is not subject to corrosion. The gutter can be hung close to a metal roof, at any pitch desired, and may be easily, quickly and strongly affixed. A leading feature in the construction of these hangers is the hinge, which allows of their adjustment to any angle or pitch. The hinge allows the stem to which the circle is fastened to hang plumb without regard to the angle at which the upper plate is nailed. The stem hangs close up to the moldings and the circle fits close to the roof, which is said to be an advantage when taken in connection with various

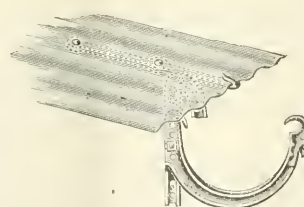


Fig. 4.—Hanger No. 34.

pitches of roofs, short projections of shingles or slates, or in the case of a long fall in a gutter.

Messrs. Berger Bros. are also introducing a new circle which they call the Royal. The circle differs from the other circles made by them in that it has a sliding bead hook instead of a strap, which is quickly wired down, forcing the gutter to spread back and down tight to the circle. The hook also allows for variations in the size of the gutters. Another feature in the circle is the improved inner stop hook and the ornamental bead underneath. The circle is designed for use with any of the shanks manufactured by the firm.

FLASHINGS.

RUDOLPH & LEWIS, 43 Michigan street, Cleveland, Ohio, have contracts for the copper work, slate roofing and skylights on the First Presbyterian Church at Warren, Pa., also for the galvanized iron, tin, slate roofing and skylights on the Glenwood M. E.

Church, Buffalo, N. Y., and the galvanized ventilating pipe for the United States Post Office and Custom House Building, Jacksonville, Fla.

THE GRISWOLD, RICHMOND & GLOCK COMPANY, Meriden, Conn., have taken the contract to build a large galvanized iron cornice for the new Nihilist Block in New Britain.

MACHWIRTH BROTHERS COMPANY, 92 Broadway, Buffalo, N. Y., send out a pretty little pamphlet of 16 pages calling attention to some of their specialties. Skylights take up half of the book, then come ridging, gutters, cornices, finials, ceilings and chimney tops. The pamphlet measures 4½ x 5½ inches, and within this small compass contains much interesting matter to the roofing trade.

THE POORMAN MFG. COMPANY issue a notice under date of May 20 that they have moved their manufacturing plant from Canton, Ohio, to Piqua, Ohio, where they have new and better constructed works especially adapted to the requirements of the business, and which will be equipped to furnish complete lines of sheet metal working machinery. They allude particularly in the announcement of their removal to their corrugated conductor pipe machines, ridge roll machinery, eave trough forming and heading machines and several other special machines and tools.

THE CATALOGUE just at hand from the American Roofing Company of St. Louis and Cincinnati is a pamphlet of 50 pages, bound in firecracker paper and carrying the name of the concern in raised black letters. In an introductory note to the trade they mention that their factories at Cincinnati and St. Louis are so situated that they have excellent shipping facilities both by rail and river. They also allude to the complete equipment of their plants. The first goods noted are corrugated sheets, which are made from either black, painted or galvanized iron. These are illustrated and described and their application to different purposes shown. V-crimped roofing comes next; then pressed standing seam roofing of different sorts, roll and cap roofing, while later on attention is given to sheet steel pressed brick, weather boarding and metallic lathing. Sheet iron and steel ceilings are described and directions are given for applying these materials. Galvanized gutters, eave troughs and spouting are shown. A page is given up to their Obelisk metallic paint and cement. Toward the end of the pamphlet are printed the rules of measurement as adopted by the Iron Roofing Association; also the rules adopted by the association to govern all contracts for roofing, siding, &c. A telegraphic code and index complete the pamphlet.

THE FOLLOWING item of interest is taken from a recent issue of the Chicago Economist: "James A. Miller has sold to John H. Whittemore of Naugatuck, Conn., the ground at 129 to 129 South Clinton street, 118 x 100 feet to an alley, for \$100,000. This is one of the best recent transactions in Chicago real estate. The property is east front, between Monroe and Adams streets. Mr. Miller will take back a lease of the ground for 99 years, at a yearly rental of \$5000. On the basis of this transaction the front foot valuation is a trifle less than \$847, and the square foot valuation \$8.47. Mr. Miller is about completing a fine building on the property. It is six stories high and occupies the south 80 feet of the tract. It is constructed of pressed brick and stone, and was designed by John H. Wagner. When it is completed Mr. Miller will occupy a part of the building with his business. The

north 38 feet of the ground is covered by a five-story building devoted to manufacturing, and is occupied by James A. Miller & Bro., but it is the present intention to remove this building and construct on the same site a ten-story structure to conform in general appearance to the building now being completed. This building is constructed with a view to adding two stories, making the block ten stories high, at an approximate cost of \$115,000, being an excellent security for the ground rent. As is well known, Messrs. Miller are the largest roofers and cornice manufacturers in the West."

THE NEW PLANT of the Saltsburg Rolling Mill Company, at Saltsburg, Pa., under erection for some months, is almost completed. The plant contains one pile and one combination furnace, three sheet furnaces, three pair furnaces, four annealing, a 22 inch bar train and sheet train, and two pairs sheet shears. The buildings consist of a main building 110 x 180 feet, warehouse and annealing department 60 x 132 feet, boiler house 32 x 60 feet, and the foundations are almost complete for a picking house 30 x 60 feet. The new concern will manufacture iron and steel sheets and rustless roofing steel. The officers are as follows: S. A. Gourley, president; W. T. Stitt, treasurer; D. U. Remaley, secretary, and Gill Stitt, superintendent.

English and American Labor Contrasted.

In the course of an editorial the *Iron and Coal Trades Review* makes the following somewhat bitter comments:

The English workman is usually conservative in his ideas, and he is slow to accommodate himself to such altered conditions as are imposed by the remarkable growth of manufacturing industries in other countries. He will not relax his trade union regulations as to the number of machines that the average worker may tend, as to the terms upon which overtime may be worked, or as to many other matters that handicap English industry, because, being ignorant of the conditions that have been established abroad, he does not recognize the necessity of modifying his system. The English mechanic or other skilled operative starts with a prejudice against innovation and rather hinders than assists anything like progress in processes and appliances. If the English manufacturer cheapens the cost of production, he gets no aid from his men. He is lucky indeed if he does not find them disposed to wreck his plans and prevent a more excellent order from being established, since the demoniac spirit that incited to Broadheadism and Luddism is not yet entirely exercised. But with the American workman it is entirely different. Many of the best and most useful of the numerous inventions that are of American origin have been due to workmen. Employers are only too ready to give facilities and rewards to inventive talent, whether in their own employment or otherwise, and for this reason American workmen are often found ready to aid employers in this direction, while they seldom refuse to give to every system designed to economize or to lighten labor the fullest possible chance.

With this essential difference in favor of American and against English industry it is little wonder that American manufacturers are making more headway than our own. A notable case in point has just been brought to our

notice. Two works are established—the one in Leeds and the other in Chicago—for the manufacture of wagon frames by a well known system. As both works are virtually controlled by the same management they present all the essential elements of a fair and equitable comparison. The works in Chicago pay just about double the wages that are paid in Leeds, and yet, such is the energy and vigor which the men in Chicago throw into their work, and such the facilities which they give for turning work out rapidly, that the products of manufacture are—or at any rate can be—sold more cheaply in Chicago than in the heart of the most active industrial community in England. Facts of this kind, however, are by no means so generally known—and especially not to the workmen themselves—as they should be. If, as a result of the superiority of the American methods, the Chicago works should take all the orders worth having from Leeds—which they would, of course, be more likely to do were they not nearly 1000 miles from the seaboard—the Leeds workmen could hardly be blamed if they were kept in ignorance by their employers of such paramount facts. It is therefore of great importance that steps should be taken to give the workmen the chance of seeing for themselves how England is losing ground by rigid and foolish adherence to our old and untenable ideas. But, as the workmen do not appear to care to trouble themselves about these matters, the difficulty is to find out how to imbue them with this knowledge. It would be much better for the country and for themselves if the workmen were to spend a tithe of the money they waste over fruitless and disastrous strikes on ascertaining "how the world wags" in outside markets. But they have still to be educated up to the recognition of this important branch of knowledge, and it is only to be hoped that the awakening may not come too late.

Another Trades School.

Some of the leading builders of New Bedford, Mass., says *Carpentry and Building*, are moving in the matter of establishing trade training in the public schools of that city. It is stated that failing to have instruction in the trades included in the regular school course, the builders contemplate the founding of a trades school supported by private enterprise. This subject is worthy the most careful consideration by both employers and workmen, and each should be equally interested in the careful and thorough instruction of apprentices. The old system of apprenticeship under which the boy was taken into the master's family and carefully taught the principles of a trade is practically a thing of the past, and some system must be adopted to fill the space left by its departure. The apprentice in the building trades to-day is simply an errand boy, who in the course of his day's work is expected to pick up sufficient knowledge to some time enable him to become a journeyman. That such lack of system as this is bad is most evident and is in itself a demand for something better. In the present state of affairs both employers and workmen have cause for complaint; the former objecting to the restriction by the unions of the number of apprentices, and the latter objecting to the substitution for journeymen of apprentices at less wages. There are other

causes of complaint on both sides, but these are sufficient to show the need of a concerted effort by both to bring about a better condition of affairs. The form of training which obtains in the trades schools of New York City and Philadelphia is regarded as offering the best solution of the question thus far established, and the New Bedford builders add another city to the steadily increasing number in which the vital need of some settlement of the apprenticeship question is recognized.

In connection with the above it is interesting to note that the Master Carpenters' Association of Bridgeport, Conn., recently appointed a committee to inspect and report upon the educational work and especially the manual training carried on at the Young Men's Christian Association in that place. In their report the committee highly commend the work done, and state that it is divided into five departments, namely: Industrial and Fine Arts, Science, Business, Language and Music. In the first named are two classes in mechanical drawing, one in machine designing, one in freehand drawing and one in elementary carpentry. In examining the work in carpentry the committee report that the association makes no claim to graduate carpenters, but to improve men in the trade and to give practical help to others who may desire. The method of instruction involves the use of 18 benches with as many sets of tools and a blackboard and plates for the purpose of illustration. The course of study pursued includes the use and care of saws, planes, chisels and laying out tools, followed by joint work and construction in framing and paneling. Attention is also given to filing and setting saws and sharpening tools. Upon receipt of the report of the committee the Carpenters' Association adopted a series of resolutions in which they heartily indorsed the work and commended it to the support of the public and to such as might wish to avail themselves of its privileges. They also pledged to the Young Men's Christian Association their cordial co-operation and aid, particularly in this department of their work.

The Bethlehem Iron Company, Bethlehem, Pa., shipped last week a ballistic plate weighing 24½ tons to St. Petersburg, Russia, for the new Russian war vessel "Petropaulowski." It is a test plate, and upon its arrival at its destination it will undergo a thorough trial at the hands of the Russian ordnance authorities. This constitutes the first shipment on the armor plate contract placed by Russia in this country. It is, moreover, the first specimen of armor plate ever produced here for a foreign government.

The special agents of the Department of Labor at Washington have begun work upon the investigation recently authorized by Congress in regard to the effects of machinery on labor, the results of which promise to yield some valuable information if the investigation can be worked out with sufficient thoroughness to afford accurate comparisons.

An unfinished tunnel, started at Tower City, Pa., some 40 years ago, is to be completed by the Reading Railroad Company, who will drive it through the mountain to Rausch Gap, opening up a rich tract of coal land.

TIN PLATES.

The Welsh Tin Plate Workers' Union.

Things do not look any more promising for the Welsh tin plate trade than they did at the opening of the year. Many of the agreements under which the workmen employed in the various works in South Wales accepted a reduction of 12½ per cent. in their wages, with the consent of their union, ended on the last day of May. Others have extended their agreements to the close of June. It is understood that a number of the workers have decided to demand further concessions on the termination of these agreements. This fact has stirred up among the workmen the desire to bring all the works to a standstill at the end of June, and only to restart after securing what they consider fair terms.

With the view of discussing this situation the Executive of the Tin Plate Workers' Union met in special session the week before last at Llanelly and decided to issue a manifesto to the trade, and at the same time to make every preparation necessary to carry out a general strike if that course was finally decided on. This will be determined at a special meeting to be held to-day. As expressing the sentiments of the Welsh workmen in the present crisis, the manifesto promulgated by the Executive Committee of the Tin Platers' Union is interesting. Addressed to "The tin plate workers of South Wales, Monmouthshire and Gloucestershire," it reads as follows:

Our present position as tin plate workers is surrounded with difficulties. As the Executives of your union we feel it a duty to use the power you have placed in our hands to insure our best interests. At the close of last year the granting reductions of wages and apathy of tin platers at work brought forth instruction by the Cardiff Council that no body of men should accept a greater reduction than 10 per cent. It is known that the average earnings over ten years of the highest paid mill men working under fair conditions amounts to £2 (£10) per week: a 10 per cent. reduction brings wages, therefore, below a fair living wage. Employers made this reduction general. Then was witnessed a further demand of 2½ per cent. This again has been widely enforced, and no sooner is that likely to become general than further demands of 15, 22½ and 25 per cent. are made, and we foresee that if you remain passive these reductions will become general, to our own loss and that of business men dependent upon us. The last six months enables all to test the effect of reductions upon the tin plate trade, with the result that our contention that wage reduction is no remedy has upon the best authority been practically demonstrated to be correct. Our employers have made our lot harder without in any way making their own better.

Not a box of plates less would have been sold if 3 pence per box, representing the 12½ per cent. reduction, had been paid. On the other hand, the reduction of wages in Wales helped American makers to get a much higher proportionate reduction from their men, to our injury. The cutting into the living wage has also caused our best workmen to place their skill at the disposal of American competitors, to the loss of the Welsh trade.

To defend the general interests, we appealed to our employers to loyally join a Board of Control, with the object of regulating make and wages. This, as a body, they refused to do, but charged those employers who did with seeking the opportunity to profitably dispose of stocks and of promoting their American interests. In spite of all this, the loyalty of tin plate workers to the Board of Control has been marvellous. Workmen made sacrifices to secure for themselves living wages, while employers refused co-operation to secure fair prices. The natural sequence is that whatever employers may do, workmen will go steadily onward to secure and defend a living wage. Your Executive have come to the conclusion: 1. That the best interests of employer and employees in the tin plate trade demands that an end be brought to the gambling in wages now going on. 2. That a uniform wage rate be re-established. 3. That the 1874 list gives to tin plate workers only a living wage. 4. That a special council of the whole trade shall be held on June 1 to decide whether tin platers will at the beginning of July agree to work at anything under the 1874 list.

Thus it will be seen that further trouble seems to be in store for the Welsh tin plate manufacturers, provided the majority of the workmen support the views expressed by their union officers in the foregoing manifesto. It is understood, however, that at some of the works a reduction of wages below the 12½ per cent. rate has already been accepted by the men, or what is equivalent to the same thing, concession of a larger make on the day's work than the 36 boxes laid down by the union.

Immigration of Welsh Tin Platers.

It will be of interest to our readers to know that the supply of skilled labor at the disposal of American tin plate works is being rapidly reinforced by immigration from the other side of the water. For some weeks past, advices from England have recorded the fact that a steady stream of workmen from the Welsh tin plate districts has been pouring over to this country. Discouraged by the unsatisfactory state of affairs in the tin plate industry in Wales, and despairing of any substantial improvement in its condition, many of the Welsh workmen have severed their connections with the old country, and have set out to seek what they believe to be a fairer field of employment among the new works which are springing up in the United States. A significant feature of this movement is that the men who are leaving Wales

for this country belong largely to the class of steady and skilled workmen. At least, they are thus described by the local papers, which deplore their departure as a severe loss to the home industry. Moreover, the bulk of the recent immigrants do not come from the ranks of the unemployed, but are men who, up to the time of their departure, were earning steady wages at some of the active works in Wales. The *Industrial World* of Swansea, which is the organ of the Welsh Tin Platers' Union, appears to be at a loss to account for the increasing number of men now leaving the country. Commenting on the subject, it says:

"One of the saddest sights in South Wales, but one, alas, too often witnessed, is the departure of sturdy, sober, and industrious tin platers, who leave the country where they fail to get employment, or what they consider fair conditions of labor. Scarcely a week passes without a group of friends being seen at various stations bidding good-bye to men who leave Wales to seek a better home in America. Every week we have reports of farewell meetings, and it will be noted from the speeches delivered thereat that it is not the ne'er-do-wells that leave us, but the very cream of the tin plate industry. This means that America becomes possessed of our best skilled workmen, and it is these men's skill as much as anything that will take from Wales its monopoly of the tin plate trade. Knowing the men who leave our shores, and the thousands of unemployed that are to be found at every tin plate center, what strikes one most is the fact that it is not the unemployed who make up the majority that leave. Last week roller-men left Morriston and Swansea, but they were from Cwmbrwrl, Worcester, and Forest Works, neither of which could be said to be hopelessly idle. Why is this? It appears to an onlooker as if there is some unseen influence at work inducing the very best men to leave Wales. American labor leaders look with disfavor at this flooding of their country with tin plate workmen. The *Labor Tribune*, the official organ of the Amalgamated Association of Iron and Steel Workers, has given a timely warning that labor is too plentiful at tin plate works. Notwithstanding this there appears just now a mad rush for the American shores. It cannot be believed that Welsh skilled workmen will break up their homes and separate themselves from their friends and give up present employment on the mere chance of getting employment in a strange country. We must acknowledge that this is a mystery. Letters are sent to friends in Wales that give no encouragement to any one to leave the country, others show that some millmen are doing fairly well, but this does not supply the explanation."

Little notice seems to have been taken of the arrival of these men here. Yet, by all accounts, the number who have landed on these shores during the past month or six weeks must have been considerable. How far their expectations of securing steady and remunerative employment in this country will be realized we cannot forecast. It is likely that they may succeed in finding early employment among the large number of newly es-

established tin plate works, which will need skilled help at their outset. But whether they will retain their berths permanently will depend, not on their skill alone, but more on their adaptability to American conditions. In the early days of American tin plate manufacture the employment of Welshmen in the pioneer works did not prove an unqualified success. While thoroughly efficient at their trade, they in many instances proved so intractable and self opinioned, and evinced such a tendency to agitation, that by degrees they were replaced by Americans. Some of the largest tin plate plants now operating in this country are, as a consequence, run entirely by native labor, and in the four years which have elapsed since the beginning of the tin plate manufacturing industry in this country, a very large number of American youths have been initiated into the so-called mysteries connected with the trade, and have proved themselves remarkably skillful. If we may judge by the quality of the work now put out from some of the largest plants where only native labor is employed.

The Town of Vandergrift.

The Apollo Iron and Steel Company, Pittsburgh, Pa., have commenced preliminary work on what will undoubtedly be the finest model town in the United States. The new town will be known as "Vandergrift," and an immense sum of money will be spent on it. The firm have a farm of 640 acres just below Apollo, Pa., the site of their present plant, on the opposite bank of the Kiskiminetus River. On the flat by the river a new works will be erected, a contract having already been given to the Shiffler Bridge Company, Pittsburgh, Pa., for an iron building 600 feet long, 140 feet wide and 34 feet in the square. This building will contain a blooming mill of modern type, an improved bar mill and eight finishing sheet mills. The new town will be located on the slope of a hill overlooking a beautiful valley. Frederick Law Olmstead is now engaged in laying out the ground. Mr. Olmstead is of the firm of Olmstead, Olmstead & Elliott, landscape architects, Boston, who designed the World's Fair grounds. It is the intention of the creators of the new city to thoroughly drain it, lay brick and asphaltum pavements, with flag sidewalks, run natural gas pipes through every street, with connections for every lot and have spring water piped through the streets before one lot is placed on the market. The town will be lighted with electricity, the company now supplying it to Apollo, and the natural gas wells owned by the company will be drawn upon to supply the inhabitants of the new town. The land is underlaid with a good quality of coal, which will be mined if a gas shortage occurs. All the streets will be broad and the sidewalks will be bordered on either side with grass plots. The main street will contain the stores, which will be built of sandstone taken from a quarry of the company. A bank, capitalized at \$100,000, will be established as soon as the town is completed. The company will not have a store. The only condition placed upon the inhabitants is the prohibition of saloons. The land on which the new plant and the town of Vandergrift will be located was acquired for a twofold purpose—first, to give the firm room for the building of the new works, and second, to establish a town in which their employees could purchase homes at a moderate cost and at the same time enjoy all the conveniences to be found in the city, and many, or all, of the luxuries of the country. The sur-

vey work has been completed and architects will begin at once on the preparation of the plans for the town. It is the intention of the firm to gradually remove their entire manufacturing interests from Apollo to Vandergrift. When the new mills at Vandergrift have been completed the work of removal from Apollo will begin. For a time operations will be carried on at both Apollo and Vandergrift, but as speedily as possible everything will be removed to Vandergrift. When present plans now under way have been completed the Apollo Iron & Steel Company will have a capacity for turning out 200 tons galvanized and smooth finished iron and steel sheets every 24 hours.

SCRAP.

THE LICKING ROLLING MILL COMPANY, Covington, Ky., have placed an order with the Leechburg Foundry & Machine Company, Pittsburgh, Pa., for the tin plate machinery which they are introducing into their mill.

DURING the recent strike at the works of the Illinois Steel Company of Joliet, Ill., the Irondale Steel & Tin Plate Company's works, at Middletown, Ind., were forced to close for a short time on account of their inability to secure steel billets from Joliet. They resumed operations this week.

THE NEW PLANT of the National Tin Plate Works, at North Anderson, Ind., is being rapidly pushed to completion. The announcement is made that the works will be ready to start by July 1.

THE *Engineer*, of London, is now publishing a series of interesting articles by an American correspondent, treating in an exhaustive manner of the growth, progress and present condition of the tin plate manufacturing industry in this country.

THE STAR TIN PLATE COMPANY, Pittsburgh, Pa., have given an order to the Leechburg Foundry & Machine Company of that city for two Mesta patent pickling machines. These machines, with the improvements recently effected by the addition of an automatic power turning attachment, have proved highly efficient. The new attachment is said to save much time and labor, as by its use the crates of plates are automatically swung from one pickling vat to the other without the use of hand power.

THE Connellsville *Courier* states that a tin plate works, to employ 400 men, will shortly be erected at Connellsville, Pa., under the direction of George J. Humbert of Norristown, Pa., who is interested in a works of this kind which, it is understood, he is seeking to remove to a more favorable location nearer the base of coal supply and with better facilities in the way of water and railroad transportation. These conditions are met at Connellsville, and the citizens have offered liberal inducements to Mr. Humbert, which he is understood to have accepted.

THE MORTON TIN PLATE COMPANY, Cambridge, Ohio, are about to erect an addition to their works 120 feet long by 40 feet wide.

THE whole of the workmen at the Cynon Tin Plate Works, Aberdare, South Wales, struck last week, on the manager demanding an increased output over the 36-box rate. The works have been running on an average only one month in three during the past two years.

ABOUT TWO YEARS AGO a number of Welsh tin plate workmen were engaged for a new tin plate works at Basse Indre, near Nantes, France. A Welshman was appointed manager

of the works and the conditions of labor and pay were fixed at practically the same level as those prevailing in Wales. After a time, however, some Frenchmen, who had been given some insight into the trade by the Welshmen, offered to produce a large make at a lower scale of wages. These terms were offered to the Welshmen, who refused and were discharged, while the native workmen were put in their places. It appears now that the Frenchmen were unable to satisfactorily operate the works, and the result has been that the Welshmen have been re-engaged on a five years' contract on the terms prevailing in Wales.

W. E. JONES, late of the Dyffryn Tin Plate Works, Swansea, Wales, has been appointed sales agent for the Phillips Tin Plate Company of Philadelphia. Mr. Jones, whose address is 918 Filbert street, Philadelphia, will take care of the trade in that city and the nearby district.

THE NEW TIN PLATE PLANT of the La Belle Iron Works, Wheeling, W. Va., is almost completed and will probably commence operations within a week or ten days. It is expected to make a test of the machinery some time during this week.

THE OHIO RIVER SHEET & TIN PLATE COMPANY of Pittsburgh, Pa., have been granted a charter to incorporate, the capital stock being \$50,000. The new company will erect a tin plate plant at Rochester, Pa.

THE FILLEY TIN PLATE COMPANY, Norristown and Philadelphia, Pa., have added to their line of terne plates a new brand termed "Filley's Old Style," which they place on the market as a high grade roofing plate.

According to statistics gathered by a prominent firm of cotton brokers in New York City, based on replies to questions received from 2141 planters, cotton merchants, banks and bankers, the cotton acreage of the United States this year amounts to 17,558,000 acres, as compared with 20,309,000 acres in 1894. The decrease thus shown amounts to 2,751,000 acres, or 13½ per cent.

The report of the Bureau of Animal Industry, at Washington, for the fiscal year 1894, shows that during the year more than 13,000,000 head of animals were inspected by their agents, in 17 cities. Of this number a total of 16,705 were condemned. The total number of beef cattle inspected last year amounted to 3,862,000, or nearly one-half the cattle placed on the market. The bureau has been doing specially good work in preventing the export of diseased cattle and of hogs infected with trichina.

Secretary of Agriculture Morton has formulated a new plan, by which he expects to obtain absolutely accurate figures of the yield of cereals in the United States. He suggests that the various States issue licenses to all threshers of grain and shellers of corn, at a nominal sum, requiring them under oath to return the number of bushels of grain threshed and corn shelled. In order that this plan shall become operative, however, the co-operation of all the State legislatures will be necessary.

The Knights of Labor have selected a site at Washington for their permanent headquarters. Ground was broken on Monday for the new building.

PLUMBING and GAS FITTING.

Noisy Faucets.

The following is the result of an interview between a Utica, N. Y., newspaper reporter and a local plumber:

"Sometimes," said the plumber, "in places like Utica where the water pressure is heavy, one of the faucets gets in the habit of roaring. You open it at full head and you hear no unusual noise, but you open it part way and you are immediately surprised by a jarring and vibration of the pipes and a roaring is heard all over the house not unlike a Silsby engine. The lady of the house gets frightened, the hired girl thinks that something is going to burst and when the householder comes home he is at once informed that the plumbing is out of order. He looks at the pipes very carefully, as though he could see right through them, then he feels of them carefully and with a knowing air remarks that they look all right. Then he tries the faucet, carefully, of course, and when it begins to roar he looks frightened, shuts it off suddenly and concludes that something is out of order. He consults a neighbor and learns that 'plumbers do not more than half do their work of late years,' and the opinion is expressed that it will cost a nice little sum to have things fixed up as they ought to be.

"The lady of the house, her husband and the hired girl are careful for two or three days every time the particular faucet is opened, and finally the sense of impending danger and the continuance of the roaring become unendurable and the householder hunts up the plumber and tells him all about the trouble. The plumber smiles and advises the householder to turn off the water in the cellar, get a wrench and put a piece of new packing in the faucet. This done, and there is no more trouble. The roaring is caused by the vibration of the packing which has become worn or loosened. It is no fault of the plumbing, not caused by extra pressure and not caused by air in the pipes."

TRAPS AND VENTS.

GERRY & BROWN of Taunton are fitting up a store in Ackerman's Block, Montello, Mass., for a plumber's shop.

THE BOARD OF HEALTH OF KINGS-TON, N. Y., is looking sharply after defective plumbing and careless plumbers in that city.

THOMAS BURNS has started in the plumbing business in Norwich, Conn.

WM. HOLBROOKS & BRO. have opened a plumbing, gas and steam fitting shop at Athens, Ga.

STAI & HEIMAN, plumbers and gas fitters, have opened a shop at Gallipolis, Ohio.

THE MASTER PLUMBERS of St. John, N. B., at a meeting held last week, elected the following officers: Thomas Campbell, St. John, president; John Borton, Halifax, first vice president;

James H. Doody, St. John, second vice-president; P. Campbell, St. John, secretary and treasurer.

J. J. MCGUIRE, who was examined on his application for a plumbers' license, at Worcester, Mass., passed successfully and has been duly licensed.

THE UNION BRASS & METAL MFG. COMPANY, St. Paul, Minn., are issuing a catalogue and price-list of their Hercules seamless copper ball floats, which are made in all sizes from 4 to 16 inches in diameter. They also make floats all sizes, weights and shapes to order to stand any desired pressure. The floats are manufactured by a patent process which enables the production of hollow copper ware without seams and of a quality which is said to be superior to hard rolled metal. These floats are specially designed for use in steam traps, receivers and apparatus under high pressure.

BUSINESS at the hollow ware works of Dawes & Myler, New Brighton, Pa., is booming at the present time. The number of men now employed is larger than ever. About 100 bathtubs are being turned out daily and the demand for them is increasing. The potteries and sewer pipe works are also working steadily with a full force of employees.

THE APPLICANTS for a journeyman plumbers' license at Waltham, Mass., are given a practical test as well as a theoretical examination. Several young plumbers who believe they have spent all the time that is beneficial as apprentices have applied for examination.

R. H. PAINE, Brainerd, Minn., will move his plumbing establishment from Main street to Sixth street south.

THE STAR COUPLER COMPANY, St. Louis, Mo., at a meeting of the stockholders held last week, decided to increase their capital stock from \$30,000 to \$40,000. The assets of the company were shown to be \$30,000 and their liabilities \$950.

In *The Metal Worker* of May 25 we mentioned that C. T. Lamson had secured the services of T. Frank Clark and was going into the plumbing, steam, hot water and gas fitting business, and stated that he requested manufacturers and dealers to furnish him circulars and price-lists relative to goods for the steam, hot water and gas fitting trade. We erroneously stated, however, that Mr. Lamson is located at Elizabethtown, N. J., his correct address being Elizabethtown, N. Y.

F. HANSON, Rome, Ga., has opened a plumbing establishment on Broad street, and has purchased the entire stock of W. B. Campbell & Co., plumbers. He is now prepared to do plumbing, steam fitting and gas fitting, and in addition to this will open a general tinning business, having with him R. W. Roebuck.

O. W. WEYBRECHT, the West Palmer Beach, Fla., plumber, is visiting Bay Biscayne section. Mr. Weybrecht will erect some of the sormotor irrigating machines on some of the fine farms in that section.

THE VANDERMAN PLUMBING & HEATING COMPANY, Willimantic, Conn., are issuing a new pocket edition of their Plumbers' Estimate and List Book, 4 x 7 in size and bound in a cloth cover. The first 12 pages are filled with a price-list of the standard goods required in a plumbing system, including iron and lead pipe, brass goods, boilers, sanitary earthenware, and a list of their patent labor saving specialties. The list is so prepared that space is left for marking in the discounts on the different goods. Two pages are required to include the different fittings which may be required in a plumbing contract. Room is left for adding the name of the customer for whom the estimate is made and the date when the price is quoted. The estimate gives a comparatively complete list of all the different fixtures and supplies that may be needed, and there is space left for adding in the quantity of the material to be used. This will aid the plumber in avoiding the omission in the estimate of any material that would be required in the job. This book should be found a great convenience to the plumber.

THE JAMES A. STIDGER PLUMBING COMPANY, at St. Louis, Mo., have filed articles of incorporation.

L. WOLFF MFG. COMPANY, 93 West Lake street, Chicago, have just issued a very pretty copyrighted catalogue descriptive of their cross bar stops and wastes. The catalogue comprises 38 pages of illustrated matter, showing each style of stop, with figure number, sizes and telegraphic code word so as to avoid mistakes in ordering and consequent delays in shipment. Wolff's cross bar stop and waste is of a distinctive type. All styles have double checks and are reversible. By reversing the position of the handle and check plate and turning the plug, they are easily changed from left to right, and vice versa. All handles are interchangeable. Socket, lever handle, tee handle or gas pipe connection can be used. Any one of these can be furnished separately to keep in stock for changing. Further, the cross bars, in which additional metal is cast in ridges crossing the front center at right angles, give much greater strength than metal of one thickness. The double check is also conducive to increased durability. The illustrations are of a character to fully bring out all these points. The pamphlet is gorgeously covered in heavy maroon colored paper with lettering embossed in gold.

The following plumbing firms have recently started business in Chicago: McCorey & Clifford, 1317 Van Buren street; William Watts, 1748 North Halsted street; John E. MacDonald, 348 Robey street; Kenny & McDonald, 247 Wells street; Thomas Wickens, 2365 North Paulina street; James A. O'Neill, 3133 Cottage Grove avenue; O'Shea Bros., 1955 North Halsted street.

THE GILBERT & BARKER MFG. COMPANY, 82 John street, New York, are issuing a circular that should interest the plumber at this season in reference to their new automatic instantaneous

water heater. It is designed to take the place of a boiler and water back yet supply hot water at any hot water faucet in the system. It only burns gas when the water is being drawn, and contains no quantity of heated water to make the kitchen uncomfortable in summer.

B. F. HOOPER of the Colwell Lead Company, 63 and 65 Centre street, New York, who has been traveling abroad for the past two months, is expected to arrive home on the steamer "Umbria" to-day.

CLEVELAND & LENNOX have established a shop in the old wire mill building opposite the railroad depot at Hamilton, N. Y., and are prepared to do sanitary plumbing. They are also dealers in iron and lead pipes, well and cistern pumps.

SECRETARY FRANK L. BEYER of the Master Plumbers' Association of Buffalo, N. Y., reports the election of the following delegates to the Convention of the National Association of Master Plumbers, to be held in Philadelphia June 11, 12 and 13: President J. S. Stygall, Jr., Chas. Geiger, Wm. H. Martin, F. H. Yuhl, J. L. Mensch, C. Brenner, H. J. Knepper; with the following as alternates: A. E. Stevenson, Jno. Germain, Dean Wilson, T. J. Kavany, F. C. Kampath, Chas. A. Smith.

AN ORDINANCE amending the plumbing ordinance of Cambridge, Mass., by striking out the last section, which provided that every drain pipe below a cellar floor be laid with a concrete base, has been passed by the Council.

W. H. SMITH, Calumet, Mich., is building a plumbing shop on Kearsarge street.

NEW JERSEY PLUMBERS, whether belonging to an association or not, are invited to meet with the New Jersey delegates to the convention of the National Association of Master Plumbers on Wednesday, June 12, at Philadelphia, for the purpose of forming a State association. Notice of the place of meeting will be given by the president of the convention on its assembly on Wednesday morning. Plumbers from Atlantic City, Trenton, Camden and the smaller towns are requested to be present. State Vice-President John Hickman of Paterson will be assisted in effecting an organization by the Hon. J. F. Blackshaw of Jersey City, Elias Berla, president of the Newark association, and Alexander Don.

ARTICLES OF INCORPORATION have been filed by the Ascher Heating and Plumbing Company, Des Moines, Iowa. The incorporators are Will Scoville and O. K. Ascher, who also constitute the board of directors. The capital stock is \$25,000. Mr. Ascher is president and Mr. Scoville secretary, treasurer and manager.

THE SHOP of E. C. Doane, Marblehead, Mass., has been undergoing some effective improvements, chief of which is the addition of a new and larger office. Hereafter the place will be lighted by electricity.

HENRY M. BIRKETT and ALEXANDER PALLAS have been appointed plumbing inspectors in Brooklyn, N. Y., at a salary of \$1200 per annum, the appointment to take effect June 1, 1895.

FRANK J. DEARBORN and FREDERICK W. HERRICK, both of Salem, Mass., have formed a partnership in the plumbing business under the name of Herrick & Dearborn.

Vest Pocket Pipe Wrench.

In Fig. 1 of the accompanying cuts is shown a vest pocket pipe wrench, offered by Chas. F. Mann & Co., St. Johnsbury, Vt. The wrench is made of cast steel, hand forged, with teeth cut in a lathe, the device weighing 1 ounce. It is designed for use in con-



Fig. 1.—Vest Pocket Pipe Wrench.

nection with any screw wrench in turning pipe, rods or any round or tapering plumber. The point is made that a plumber, steam fitter, machinist, engineer, &c., by having one of these wrenches in his pocket, will often be

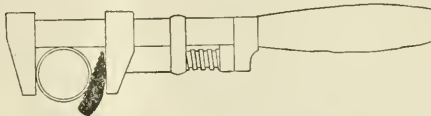


Fig. 2.—Pipe Attachment Applied to Wrench.

able to find a screw wrench to use it in connection with, as in Fig. 2, when it might be difficult to secure a pipe wrench. The manufacturers claim that the device will not slip or stick on pipe; that it will not dent pipe; that it will not break; that it will hold hardened steel as well as soft iron, and that it will hold $\frac{1}{4}$ inch wire or a 3 inch pipe. The wrenches are mounted 12 on a neat heavy card.

The Atlanta Exposition.

The Cotton States and International Exposition, which is to be opened to the public at Atlanta, Ga., from the middle of September next to the close of the year, gives promise of being one of the notable exhibitions held in this country. Its promoters already claim that it will be excelled only by the Centennial Exhibition at Philadelphia in 1876 and the World's Columbian Exposition at Chicago in 1893, and a visit to the work now in progress recalls features of each of these great shows.

The ground occupied by the buildings approaching completion, and to be embellished with others, is like the area of Fairmount Park devoted to the Centennial Exhibition. It is rolling ground, with a fair proportion of timber. The names given to various buildings and their disposition about artificial lakes recalls the arrangement at Jackson Park, Chicago. The energy exhibited and the interest taken in the project would seem to insure its success, but the assistance given by the United States Government will of itself go far toward making the Cotton States and International Exposition worthy of a place in the annals of industrial shows. Out of an appropriation of \$200,000 authorized by Congress a building with a floor space of 14 acres is being erected, and in it will be installed exhibits of the various departments of the general Government, including a large display by the United States Fish Commission. Another

building now well under way, devoted to the Forestry and Mining, is being constructed by the Exposition Company, but is to be occupied by exhibits collected by and installed under the direction of Dr. David T. Day, Chief of the Division of Mineral Resources of the United States Geological Survey, and B. E. Fernow, Chief of the Forestry Division of the Department of Agriculture. This building covers about $\frac{1}{10}$ acre, one half of the space being assigned to mineral resources and metallurgical products, and one-half to forestry and industries connected therewith.

The Government has further fostered the enterprise by official sanction of invitations to foreign nations, and the exposition officers have given particular attention to securing exhibits from Mexico and South American States. The same customs arrangements are made for the Atlanta as for the Chicago exposition.

In addition to those mentioned prominent buildings are to be devoted to Administration, Fine Arts, Electricity, Machinery, Transportation, Manufactures, an Auditorium, a Woman's Building and a building erected by the labor of, paid for by the earnings of and to be filled with exhibits made by the colored people of the South, a novel and instructive conception.

The advanced stage of most of the larger buildings and the work done within the 200 acres devoted to exhibition purposes give promise that within the three and a half months between the present time and the opening of the show the grounds and structures will be in a most attractive state and ready for all exhibitors.

It is questionable whether the name given the exposition at Atlanta has not served to have it appreciated as a local or at best a sectional exhibition. Its primary object is to show what has been done in the States usually recognized as "the South," and to develop trade with Mexico and South American countries; but the management expresses a desire to draw exhibits from all parts of the world. As no portion of this country can advance without benefiting the whole, and as the development of the resources of any section must result in the advancement of our national wealth, all can rejoice in such a display as will awaken pride and encourage further development, even if this should be largely localized.

The aggregation of buildings, each devoted to specialties, the sizes of these structures and the area assigned to the exposition give to this enterprise a scope which should remove it from the list of local or provincial exhibitions.

The canal boat owners of New York State have decided to meet the competition of the railroads in the matter of freight rates.

Plans have been completed for an electric railroad between Philadelphia and Reading, a distance of 53 miles.

STEAM AND HOT WATER.

Apportioning Radiation.

BY UNIT.

At different times I have seen in *The Metal Worker* some excellent information on the subject of apportioning radiation, and I think that I can give some suggestions on this subject that will explain how some people can install a heating plant at a very low figure and thus secure a contract over their competitors. It is very demoralizing for a good fitter who works on his reputation to lose contract after contract to some man who is no better qualified to do work cheap than he is, and he oftentimes fails to understand how it is done. It has been said in *The Metal Worker*, and very correctly, that the secret of success lies in the correct apportioning of the radiation. Now, a little exposure of the method that our cheap friends use in calculation may be of advantage. An old hand at the game who was inclined to be a little garrulous opened his air vent and the following escaped:

"I do not think it is charitable to your neighbor to make him burn more coal than is necessary. Now, we all know that the old man and his wife do not live all over the house, and if you want to keep him happy the dining room must be not warm but hot, particularly in the morning. The only way to do this is to put a big radiator in that room. We also know that if the family is a growing one they will all go into the mother's room to dress, and if there is a big radiator there the upstairs is well heated. As most of the time of the family is spent in these two rooms a fair sized radiator in the sitting room will be satisfactory. You can reduce the radiators that are placed in the parlor, in the hall, in the different chambers way beyond what you would dare to if you did not calculate on the basis that I do. Now, don't you see that a heating plant of this kind won't cost a great deal for radiation, and if you haven't got so much radiation a size smaller boiler will do the work. Here is quite an item of saving when you are bidding for the work. If any trouble arises in a particularly cold spell it is not a very hard matter to increase the steam pressure which is carried on the boiler or to put the hot water job under a few pounds pressure. This will increase the temperature in the radiators and will probably increase the coal bill for a few days; but in the majority of cases the fact that the dining room and living room are warm will relieve you of any trouble. It is only when there is scant radiation all over the house and no one room can be kept warm that people do the hardest kicking. If a man finds out in a few years that he would rather have a larger boiler and more radiation he ought not to quarrel because you have saved him enough in the coal bill to pay for the changes and have at the same time made two blades of grass to grow where only one would have grown if a larger boiler and lots of radiation had been put in in the first place. Sometimes it is difficult to make the

customer see it in this light. In laying out a heating plant some people study the direction of the wind, the size of the windows and the location of the rooms; but if they give some little study to the habits of the family, the size of the family and the age of the members, and find out which rooms are used for certain purposes, they will be more successful in laying out their heating plants."

To a man who wants to build up a reputation for strictly first-class work the method of this old practitioner will not recommend itself very strongly, and it is quite probable that if the general public was aware of such methods they would steer clear of those who practice them.

Heating a German Theater.

The following is an extract from a letter of E. A. E. Woodrow in the *American Architect and Building News* describing the Frankfort Opera House, Frankfort, Germany, and refers to the heating system.

The greater space underneath the building is constructed in vaults used for the scheme of heating and ventilating, carried out under the same principles as the ventilation of the Vienna Opera House. The warming throughout is done by a system of steam pipes, and the fresh air in winter is warmed before it enters the building and in summer is cooled so as to be agreeable to the people who breathe it.

In the administrative rooms, dressing and rehearsal rooms, and, in fact, all other rooms used by the *personnel* of the theater, the warming is produced by means of coils placed in the window niches; the fresh air from without, as it passes into the room, comes in contact with these coils and enters the room suitably warmed; by means of a handle fixed on the window board the supply of air from without can be regulated to a nicety, and can even be entirely cut off, thus allowing the coil to act only on the air within the room. If required, when the room becomes too hot the steam can be cut off from the coils altogether.

In the walls of the rooms where this system of heating is adopted are flues opposite the windows, with grated openings into the flues just above the floor level and other openings at or near the ceiling level. In the winter the bad air, being dense, escapes by the lower outlets, while in summer it finds its way out by the upper extract flues and is by these conveyed to an extract cupola at the top of the building.

Now this method of warming, which I have just described, is adopted not only for the rooms behind the curtain, but for the stage and passages surrounding it also. The system used to heat the auditorium and parts of the building used by the public differs considerably from the foregoing, inasmuch as the air before being admitted at all into the parts occupied by the people is previously warmed or cooled in the vaults in the basement, being conveyed from thence in the manner usually in vogue where this system of heating is employed.

The basis upon which the heating and ventilation of the Frankfort Opera House is designed and carried out is to supply each of the 2000 spectators, whom the theater will hold with a supply of fresh air equal to 40 c. m. (about 1400 cubic feet) per hour. To do this the air is taken from the outside into a collecting room situated beneath the vestibule, and is conveyed from thence through two underground tunnels to both sides of the theater, which it enters through gratings.

The air is heated in the winter by being passed over large steam coils and is cooled in the summer by being forced through a three-fold curtain of water. The 80,000 c. m. (about 2,800,000 cubic feet) of pure air which is required every hour is drawn into the collecting chamber by means of a large fan, 3 m. (about 10 feet) in diameter, which is made to revolve from 90 to 120 revolutions per minute by means of a 15 horse-power engine.

The cold air chamber in the bottom story of the three-story basement communicates with the two upper stories of the basement by means of large perpendicular hanging cylinders of plate iron, fitted with covers. The air from the cold air chamber below passes through openings round the cylinders into the heating or middle chamber (which is heated by means of thin steam tubes) and ascends into the mixing chamber above; cold air also ascends by means of the cylinders from the cold air chamber (the lowest chamber) into the mixing chamber (the top chamber), pouring over the top of the cylinders and mixing with the warmed air which ascends from the hot air chamber (the middle chamber).

The air passes from the mixing chamber through perpendicular flues to the auditorium, various rooms, passages, &c., which it enters through gratings fixed just above the floor. In the area level of the auditorium the gratings formed under each seat are placed in the floor, but in the galleries the slits are made in the risers of the steps to the seating of the tiers. The extract gratings are placed in the ceiling over the seats and the foul air is conveyed through a series of channels or flues into large conduits, which culminate in one large central extract shaft below the cupola, the vitiated air finding its way finally to the outside through the lowered sides of the cupola.

The sun burner over the auditorium assists the system of ventilation, as it sets up a rising current of air, causing the air to become rarefied and ascend into the chamber in the roof, containing the heated tubes. Thus the whole of the air of the "house" has an upward motion, which is further increased by the pressure of the air from below.

If the quality of the inner and outer temperatures in summer requires a further means of expulsion, then an exhaust fan, which is placed close under the cupola, can be set in motion by means of a wire rope worked by an engine below. This fan, which is about the same size as the fan in the collecting chamber, is made to revolve some 15 or so revolutions per minute more than the fan below, so as to prevent any stagnation of the air in the theater.

In order to facilitate the working of

the various large valves, some of which are several meters square, which regulate the inflow as well as the outflow of the air, the machinery is all placed in one room located in a central position. Here the engineer watches the electric signals which announce to him the different temperatures in various parts of the building, and here he regulates the whole apparatus by turning on or off the steam valves and by making the fans revolve faster or slower as the exigencies of the case demand.

The building is protected from fire by means of a complete service of fire appliances, which supplement such provisions made by the architects against fire as massive walls, iron doors and sheet iron curtain separating the stage from the auditorium. All over the building, especially in places where a fire is most likely to break out, hydrants (numbering in all some 80) are distributed, and in addition to this the stage is further protected by a specially designed extinguishing apparatus placed on the gridiron, in the flies and in the cellar. This consists of a system of fine copper pipes which cross each other and from which, upon the fireman's opening the valves, a sheet of water can be produced flooding the whole of the stage. It is understood that this arrangement has been put to the test and found not wanting in its effects.

Wanted, a Rule for Steam Mains.

From M. S. E., Westminster, Md.—Will *The Metal Worker* please give me some data on steam fitting so that I may calculate the proper size of steam pipe to carry a given amount of radiation?

Answer.—The rule commonly observed by steam fitters is to calculate that each 100 feet of radiation will require in the main an area equal to that of a 1-inch pipe. This rule is varied in practice according to whether a one or two pipe system is used, and the size of the radiator to the work to be done, and also to correspond with the experience and judgment of the steam fitter.

A Boomerang.

BY W. E. R.

"They say a man will get so accustomed to lying that he doesn't know when he tells the truth." So said Jed Smith, one of the best salesmen in the steam and hot water line that ever took an order, to a party of drummers in the hotel sitting room one evening. "But that, I think, is putting it rather strong," he continued. "Of course there are some times when you fellows, as well as myself, will make some claims on the spur of the moment that would bother you considerably to substantiate." We all denied this assertion and told him to prove it, which, of course, he did not try to, and we were mighty glad he didn't. Jed then told us the following story:

"I didn't know what an accomplished liar I really was until one time when I had to go to B— to sell a boiler, in answer to a letter from the resident steam fitter there. Arriving at B— and finding my party's place, I went in." We had all settled down to listen attentively, as we knew Jed would entertain us with some escapade of his, and he had had many. "It was the ordinary little shop, a duplicate of which you can find in most any small

town. The proprietor proved to be a good hearted, honest Dutchman, named Grosmeir. He was not a German, but an out and out 'Dutchy.' After making my errand known to him, he said, 'Vell now, I vas sorry. I wait tree weeks and den upgifs you, den gets me dot boiler kysterda already.' And he looked awfully sorry, and acted as if he had done me a personal injury by not waiting until I got there.

"I saw at once where the trouble was. The firm had received his letter all right, but by the time the letter got to me and I got time to go to B—, Grosmeir had got his 'boiler.' Seeing there was no chance for a sale, I thought as I was there and could not catch a train for three hours, I would have some fun with him; so I told him that I also was very sorry, as I would like to have shown him our latest improved boiler, something simply wonderful. He took the bait nicely, and I continued: "'There have been great improvements in the last few years.' 'Yaw,' he replied with great emphasis, 'I extinkly remembers minself dot funtine years ago, dot if a feller wanted a hod water or steam boiler, he vould put in a hod air furnish, and thinks he vas putting styles on.' I didn't quite catch his argument, but agreed with him. We talked a few moments; and, just as I was going to give him a little coaxer, he asked: 'What vas dey about dot boiler you vas gone to show me?'"

"This was what I was waiting for, and I prepared to spread myself. 'Oh,' I said, 'you mean our centrifugal, compound, automatic generator.' Grosmeir looked hard at me, but I went on. 'Well, you know, as the people get more advanced, they want more labor saving appliances.' 'Yaw,' he broke in again, 'Ven dose lazy plumpers wants to vipe a sholnt, dey maige der kid do id, vile dey gomes around! Satsterday nite for dere vages by litening und tunder.' Again he was a point ahead of me, but I was full of my joke and didn't contradict him. 'Yes,' I said, 'and to meet this demand, our firm employed the whole corps of United States civil and uncivil engineers to construct the most perfect boiler of the present day. I will just give you a few of its most valuable points.

"'First, it has an aqua extractor.' " 'Vat?' said Grosmeir. 'That is the name of an appliance which extracts water from the air.' He looked a little puzzled, so I explained. 'You see there is a certain amount of water in the air.' (He had evidently learned that fact, for he nodded as though he understood. 'Well, this aqua extractor' (I pronounced it slowly so as to give him the full benefit of it) 'is a compound of chemicals in a tank near the boiler that extracts enough water out of the air to supply the boiler up to the water line. This, you see, saves all trouble about water.' Grosmeir's eyes opened a little but he said nothing. 'Then there is the heatoregometer.' 'Vat?' says Grosmeir. 'The heatoregometer. Ever heard of it?' He said he thought he had, but couldn't for 'shure zay.' 'Well,' I explained, 'this connects to each radiator, and if set to 70° the room would always be 70° hot, as the heatoregometer would close off or open up just enough sections to keep it at that temperature.' 'By chiminy!' he cried, 'dot was great.' 'Yes, indeed,' I replied, 'and what is more, it has a mechanical contrivance which works at 1 pound pressure, that puts on coal, shakes the grate, throws the ashes out of the ash pit and regulates the

amount of coal by a special style of thermometer which is placed outdoors.' Grosmeir's feelings were too great to be expressed in English, so he gave me the full benefit of them in Dutch. 'So you see,' I went on, 'with this style of boiler all you have to do is to dump a couple of tons of coal in the chute which leads to the boiler, start your fire, build a place to hold ashes in, and your house is warmed without any further attention until the coal is burned out, which would be in about two months or so.' Grosmeir hadn't a word to say either in Dutch or English. He accompanied me to the door and bid me good by, and I left him out on his stoop in the freezing cold, bareheaded and in his shirt sleeves, a perfect picture of amazement and profound thought.

"I blowed considerably about the sport I had had with him; although I was sorry afterward that I had not kept my mouth shut. About a month later I received a letter from the firm, saying that they had a letter from H. Grosmeir, in B—, for one of our latest center flued, confounded, generator, steam boilers, to carry about 400 feet of radiation; and he also wanted a water distractor and radiator regometer. They thought I had better see him and get a clearer statement as to what he wanted, adding that, as they found he was O. K. financially, they had shipped him a No. 4 steam boiler.

"Say, boys, that letter knocked me silly. I realized I was in a devil of a fix. But the only thing to do was to face the music, so I started for Grosmeir's. While on the train I had arranged a nice little tale to tell him; but after getting to his place my nerve sort of left me. When he told me that the boiler had been received all complete and asked when the other improvements would come I began to get uneasy.

"'Oh!' I replied, 'then you wanted our latest improvements. Well, that is unfortunate.' And I explained to him how the inventor had been suddenly killed just as we were about to put his invention on the market; and as he had trusted entirely to his memory about the chemicals used, his secret had died with him.

"'Vell,' he said, 'dot vos too bad; bud how boud dot regomeromer radgiator?'"

"'Oh, that worked by chemicals too,' I uneasily replied.

"'Yaw? Bud how boud dot machine vat runs dot coal und ash kerbishness; dot didn't work by comicals.'

"'For a moment I was stuck, and that moment was the crisis. Grosmeir tumbled to the whole racket. Talk about a mad Dutchman! He went for me first in English, then in Dutch, then in both. He made us not only take the boiler back, but pay him for his trouble and expense before he would give it up, which we did, rather than stand a lawsuit.

"I tell you I was a sick man, and that's the last time I ever misrepresented anything." And Jed sat back as though he actually believed this last statement himself.

A SECTION of the indirect radiator designed by Heating Engineer Fred P. Smith, Mohawk Building, Fifth Avenue, New York, for use in the Scranton High School was on exhibition at the showroom of the American Radiator Company, 92 Centre street, New York, this week and attracted a great deal of attention. It has a short vertical and a long horizontal chamber forming an angle, and is tapped at the side at both the top of the vertical and bottom of

the horizontal sections. The extended surface is of the web type, and is placed at an angle of 45° instead of vertically, as is customary. This is said to relieve the friction of the air passing over the radiator and to permit a stack of several layers of these sections to be used.

HEATING NOTES.

AMONG recent Illinois corporations is the Charles Smith Mfg. Company, at Chicago. Capital stock \$10,000; to manufacture boilers and furnaces; incorporators, J. H. Haswell, J. W. Armstrong Robert C. Morse.

AT THE ANNUAL MEETING of the stockholders of the Harrisburg Steam Heat & Power Company held at Harrisburg, Pa., last week, the following were elected directors: H. Cohen, W. M. Donaldson, T. D. Greenawalt, Thomas H. Heist, Wm. Jennings, Harry A. Kelker, H. B. Mitchell, E. B. Mitchell and Harry C. Ross.

J. A. GOODRICH, who has been connected with the American Radiator Company as the manager of their New York branch since the organization of the company, and was for several years previously with the Pierce Steam Heating Company, has resigned to enter other business.

D. R. McCALLUM, manager of the New York house, at 69 Centre street, of the J. H. McLain Company, Canton, Ohio, is remodeling his showroom previous to exhibiting the new things in the boiler line which will be offered to the trade this year.

GEO. H. WEYMOUTH, one of the salesmen of the W. H. Page Boiler Company, Norwich, Conn., turned in to the house orders for 34 Volunteer and All Right steam and hot water boilers, the result of 14 days' work. E. G. Whittaker, who is traveling in the vicinity of Pittsburgh, is sending in some good orders to the New York office, at 61 Gold street.

WESTERN PAUL STEAM SYSTEM COMPANY, Chicago, Ill., have been incorporated, with a capital stock of \$250,000, to manufacture steam and power plants. The incorporators are Kellogg Fairbank, Benjamin P. Hinmann, Jr., and Arthur W. Hale.

THE NEW SHOWROOM devoted to the Winchester steam and hot water boilers at 141 Centre street, New York, in charge of Secretary N. E. Frost of the Smith & Winchester Company, Boston, makes a very handsome display. The room is square with large windows at the back, where a convenient office is furnished with a red velvet carpet and quartered oak furniture and inclosed with a railing of polished brass pipe. The entrance is directly opposite, and raised platforms covered with red velvet carpet occupy the remaining wall space. At one side five sizes of the Winchester boiler for steam are arranged, painted black, white and garnet with gilt and silver lettering and ornamental bands. On the other side the Winchester boiler for hot water is decorated in a similar manner, making a very attractive line of goods. At one side of the showroom *portières* drape the entrance to their pump and windmill showroom. Aside from these special lines the Smith & Winchester Company make a specialty of "Everything" for steam, water and gas fitting, with a large line of sanitary fixtures and appliances.

THE new surface burning Florida boiler in the showroom of the American Boiler Company, 94 Centre street, New York, brings a great many visitors to investigate its construction who are old and staunch friends of the base burning Florida.

Ventilation.

BY SAMUEL A. HEINS.

School Ventilation.

Again I wish to say something on the subject of ventilation, a subject that should be agitated and kept before the public, and they should be compelled to ventilate the public schools. That would be a very great benefit to the health of the pupils and the teachers. The depression and faintness from which many students suffer after being confined in a poorly ventilated school room is clearly traceable to vitiated air, while the evil is often ascribed to excessive mental exertion. The effect of ventilation upon the health of students is a subject of universal interest to parents and educators and should receive more attention. I have visited a number of schoolrooms and found the air in all offensive to the smell, the odor being such as one would imagine old boots, dirty clothes and perspiration would make if boiled down together. In a school that should be ventilated the hot air enters at two registers in the floor on one side and makes (or is supposed to make) its exit by a ventilator at the floor on the other side of the room. The master said the air was supposed to have some degree of intelligence and to know that the ventilator was its proper exit. Thorough ventilation has been neglected by many school officials on account of the increased expense it causes. In our climate, during seven months at least, pure atmospheric air must be paid for. The construction of vertical ducts, the extra amount of fuel and the attendant expenditures are the objections which in the opinion of many persons outweigh the health and happiness of the future generation. It is necessary for the proper ventilation of our schoolrooms that an adequate supply of fresh air should be admitted to the room and should be discharged as contaminated after its expiration. The proper ventilation of the schoolroom consists in the warming and introduction of fresh air from without and the discharge of the expired and unwholesome air from within. This may be accomplished by means of doors, windows, chimneys and finally by ventilators—one placed near the level of the floor and the other near the ceiling of the room, the ventilators to be arranged on the opposite sides of the room in order to insure a current and an abundant supply of air. When trustees and patrons realize that pure air is absolutely essential to health, and that their children are being slowly poisoned by the foul air of schoolrooms, then they will construct our halls of learning with a due regard for the laws of hygiene, and students will not droop under their tasks on account of the absence of nature's most bountiful gift—pure air.

The ventilation of factories and workshops is a subject which demands the immediate attention of manufacturers and employers. The odors of oil, coal gas and animal products render the air foul and stagnant and often give rise to diseases among operators. From 200 to 400 persons are often confined in workshops 600 feet long with no means of ventilation except windows on one side only. The air is breathed and re-breathed until the operators complain of languor and headache, which they attribute to overwork. The real cause of the headache is the inhalation of foul air at every expansion of the lungs. If the proprietors would provide efficient

means for ventilating their workshops the cost of construction would be repaid with compound interest in the better health of their operators and the consequent increased product of their labor. Our manufacturers must learn and practice the great principle of political economy—namely, that the interests of the laborer and employer are mutual.

Not less important is the ventilation of our dwellings. Each apartment should be provided with some channel for the escape of the noxious vapors constantly accumulating. Most of the tenements occupied by the poor of our cities are literally dens of poison. Their children inhale disease with their earliest breath. What wonder that our streets are filled with squalid, wan visaged children. Charity indeed visits these miserable homes, bringing garments and food to their half famished inmates, but she has been slow to learn that fresh air is just as essential to life as food or clothing. Care should be taken by the public authorities of every city that its tenement houses do not degenerate into foul hovels like those of the poor English laborer so graphically portrayed by Dickens. But ill ventilated rooms are not found exclusively in the abodes of the poor. True, in the homes of luxury the effects of vitiated air is modified by food, &c. Men of wealth give far more attention to the architecture and adornment of their houses, to costly decorations and expensive furniture than to proper ventilation. Farmers, too, are careless in the construction of their cottages; their dwellings are often built, for convenience, in too close proximity to the barn. Because they do not construct a suitable sewer or drain the filth and refuse food is thrown out of the back door, where it accumulates and undergoes putrefaction. The vitiated air penetrates the interior of the house and there being no means of ventilation it remains to be breathed by the occupants. The result is that for the sake of saving a few dollars which ought to be expended in the construction of necessary flues and sewers the farmer often sees the child he prizes far more than his broad acres gradually decline or suddenly fall a victim to fevers or malignant disease. Parents, make your homes healthy; let in the fresh, pure air and bright sunlight so that your conscience may never upbraid you with being neglectful of the health and lives of your little ones!

Sailing vessels are having a hard time in finding sufficient freight at the Atlantic ports of this country just now. After being in port at New York more than a month, the fast iron sailing ship "Liverpool," finding it impossible to obtain freight, took her departure last week for St. John, N. B., in tow of a powerful tug. Recently, also, the four masted ship "Eulomene," after unsuccessfully seeking a cargo at the same port, was dispatched by her owners to New South Wales, the first time a vessel has been sent from New York on such a long voyage in search of cargo.

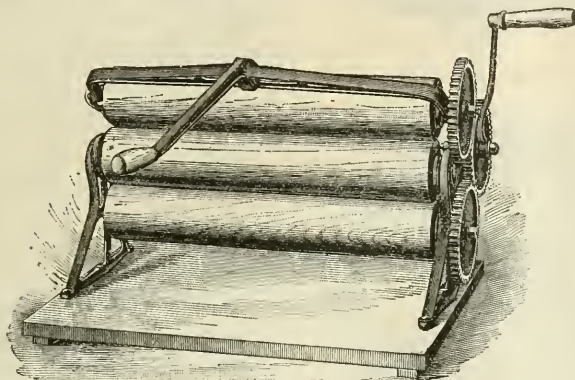
Plans have been submitted by the New York, New Haven & Hartford Railroad for four-tracking the Providence division for 5 miles through the center of Boston, building a number of bridges and making other improvements all along the roadway. The contemplated improvements will, it is said, cost several million dollars.

THE RETAIL STORE.

The Petersen Mangle.

Petersen & Fischer, 166 Pierrepont street, Brooklyn, N. Y., are introducing the mangle herewith illustrated. It consists of three wooden rollers, the top and bottom ones being revolved by the use of a crank and gearing. The middle roller is revolved by contact with the ones above and below it, the pressure being regulated by the hand lever. In use the lever is raised to

ing and closing of the dampers are effected by means of a spring connected with a rod resting against the top of the door. This is regarded by the manufacturers as one of the most valuable improvements ever made in refrigerators. The drip cup or trap consists of a good sized cup, into which the lower part of the drip pipe extends so as to form a trap when but partly filled with water. A rod attached to the cup enables it to be pulled downward and completely



The Petersen Mangle.

allow the middle roller to be removed, around which the article to be mangled is wrapped. The roller is then replaced in the frame, and with the left hand on the lever to regulate the pressure, the crank is turned with the right hand. When the mangling is completed the article is removed from the roller. The point is made that no heat is required in connection with the mangle. The machine is designed for use in the household for mangling sheets, tablecloths, napkins, handkerchiefs and other flat pieces. It is referred to as cheap, durable and useful; as saving labor, time and coal; as retaining the fresh smell of the clothes; as preserving their fabric; as simple in construction, with no parts which can get out of order, and as being used with ease by any person. All parts of the mangle are interchangeable, and extra rollers can be obtained. The machine is designed to retail at \$5.

New Perfection Refrigerators.

The Belding Mfg. Company, Belding, Mich., have introduced a number of improvements in their refrigerators this season. Conspicuous among these new features is their automatic cold air damper attachment. This device consists of hinged metal dampers which completely close the opening between the ice chamber and the provision chamber when the door of the latter is opened. Thus the passage of warm outside air over the ice is prevented, necessarily economizing in the consumption of ice, particularly in cases in which the doors of a refrigerator are opened very frequently. The automatic open-

ing and closing of the dampers are effected by means of a spring connected with a rod resting against the top of the door. This is regarded by the manufacturers as one of the most valuable improvements ever made in refrigerators. The drip cup or trap consists of a good sized cup, into which the lower part of the drip pipe extends so as to form a trap when but partly filled with water. A rod attached to the cup enables it to be pulled downward and completely

The Eclipse Refrigerator.

The new Eclipse refrigerator is patented and manufactured by the Bowen Mfg. Company of Fond du Lac, Wis. They state that the interior of the refrigerator is constructed entirely of metal, with no wood exposed to moisture. The walls are lined with zinc, soldered perfectly air and water tight. The ice chamber is constructed of heavy galvanized iron in such a manner that the ice is suspended and not permitted to touch the refrigerator walls at any point; hence it is impossible for the walls to become moist and dampness to enter the casing, causing impure odors, &c. The bottom of the ice chamber is a pan of extra heavy galvanized iron, separated at all points from and fastened securely to the casing walls. The four walls of the ice compartment, united to form a frame, are separable from the bottom and removable for cleaning. A removable drip pan is sus-

pended to the bottom of the separable ice chamber, which makes it impossible for moisture resulting from condensation to drip into the provision chamber. The patented ice rack is a corrugated plate, riveted to heavy bands of iron, which are bent to form its legs. The plate is bent upwardly at its sides to prevent the waste water flowing over except at its end nearest the outlet. The ice rack, bottom and drip pan slope toward the drip pipe, insuring prompt drainage of the waste water. The drip pipe is located at the side of the refrigerator, where it is in view and where the waste basin can easily be removed. The drip pan and bottom beneath the ice rack have openings through which the cold air passes into the provision chamber, forcing the warmer air upwardly along the four sides of the removable walls through the apertures above and back on to the ice without coming in contact with the descending cold air, thus providing a perfect circulation and making it possible to reach an extremely low temperature in the quickest possible manner. The case is made of selected ash, beautifully carved, and finished in antique with best filler, shellac and coach varnish. The locks and hinges are of solid bronze. The refrigerator has self retaining casters and the walls are filled with mineral wool.

The Asbestos Torch.

Asbestos Torch Company, 153 Milk street, Boston, are offering the torch here shown. It consists of a metallic bowl, hung to swing, and is filled with asbestos, which when in use is saturated with kerosene oil. The asbestos remains uninjured by the flame and can be used indefinitely as an absorbent. The torch is designed for use in night fishing; also for the extermination of caterpillars,



The Asbestos Torch.

moths and all troublesome insects and grubs that infest trees, shrubs and plants. The point is made that when the torch is held under caterpillars' nests and is passed under the branches and around the trunks of trees where insects lodge the heat instantly destroys the insects and that it will in no way injure the trees, thus saving annually much loss and vexation.

Boss Lemon Squeezers.

§ The accompanying illustrations represent wood lemon squeezers of fancy shapes, put on the market by John

Columbian Kitchen Spoon.

M. L. Schoch, 47 North Tenth street, Philadelphia, is putting on the market the kitchen spoon shown in the accom-

made in two styles, tinned and nickel plated.

Stove and Hardware Dealers of Kingston, N. Y., and Vicinity.

BY HENDRICK.

The old city of Kingston, originally known as Esopus, aside from its enterprising stove and hardware dealers, has much of historical interest. It was one of the first settlements of the State and is justly proud of being the place where the constitution of the State of New York was adopted and where the first Legislature met. This constitution was framed in 1777, in the old stone house built by Col. Wesel Ten Broeck in 1676, which still stands well preserved through centuries of change. Among the places of interest is the old State House on the west side of Clinton avenue, which carries the thoughts of the visitor back to the first settlement of Kingston by the Dutch in 1614. The first Dutch Church stands in the old town churchyard, where yet rings out to the congregation the silver bell cast from plate contributed by the old churches for the purpose. At present and not least in importance in this historical place are the stove and hardware dealers.

Adjoining the old State House is the large building where F. Gallagher carries on the stove and tin business. Fred, as he is known, has not been in business as long as the old State House has been built, for it was in 1854 that the business was established by his father, and which, since the latter's death a few years ago, he has successfully carried on. The long sign on which Mr. Gallagher's name appears is peculiar in some respects and is one well calculated to attract the attention of the passers by. It hangs across the walk and extends somewhat out into the street. Suspended from it by hooks are milk and water pails, coal scuttles and other articles usually found in a tin shop, but seldom found in the position in which they are here placed. For his leading lines he handles the Andes, made by the Phillips & Clark Stove Company; the P. P. Stewart and Splendid parlor stoves, made by the Fuller & Warren Company; the Welcome, made by the Syracuse Stove Works; the West Shore, made by the Littlefield Stove Company, and the Manhattan ranges, made by Eugene Munsell & Co. As early as August 15 Mr. Gallagher's full line of parlor stoves are displayed on the sample floor ready for the fall business. This idea of early sampling he considers a good one, as people begin looking for parlor stoves as early as August. Mr. Gallagher also does considerable in the way of tin roofing and general jobbing, in addition to the hot air furnace work in which he is extensively engaged, being the agent for the Perfect, made by the Richardson & Boynton Company.

Davis & Hoffman occupy a large building known as the Arcade, which stands at the head of the main street. This concern carries a full and complete assortment of the Red Cross stoves and ranges made by the Rochester Co-operative Foundry Company. The main part of the store, which is about 30 x 40 feet in size, is given up to stoves and tinware, the office being in the rear and the tin shop in the basement, this arrangement making it convenient to handle heavy goods. The firm enjoy an excellent trade in the Howard furnaces made by the Howard Furnace Company, for which the concern are Kingston agents.

Nicholas Murphy does a general jobbing and tinning business as well as handling the Sure Luck stoves made



Fig. 1.—Boss Lemon Squeezer.

Sommer's Son, 355-365 Central avenue, Newark, N. J. The body of the squeezers is made of sugar maple, well finished, with bowls of rosewood, lignum-

panying illustrations. Fig. 1 shows the spoon having a false or movable back attached to a wire rod which passes underneath the stem and enters

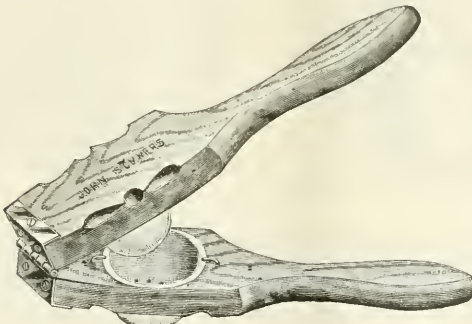


Fig. 2.—Boss Lemon Squeezer, Porcelain Bowl.

vise, imitation mahogany and porcelain. The bowls are 3 inches in diameter and $\frac{1}{2}$ inch thick, better and stronger, it is stated, than this class of goods ordinarily are. The squeezers are trimmed

the handle. A cross bar is fastened to the wire at about the middle. In use the spoon is cleared of its contents by a movement of the cross bar in the direction of the bowl, when the false back is



Fig. 1.—Columbia Kitchen Spoon.

with overlapping end hinges of brass nickel plated, brass not plated, and of steel. The point is made that the squeezers are superior to those made of iron, tinned or japanned; that they

carried to the mouth and effectually empties the bowl. Fig. 2 shows the spoon with the false back or scraper moved toward the mouth of the spoon. The spoon is designed particularly for



Fig. 2.—Columbia Kitchen Spoon, Showing Scraper.

will not break or crush; that there is no danger of parts rusting or corroding, as they are all of wood and porcelain, and that they are easily kept clean and suitable for use.

use with puddings, batter, ice cream, mashed potatoes and other preparations having a tendency to stick to a spoon, but may be used in all cases where an ordinary spoon is used. The spoon is

by Burdett, Smith & Co., the Manhattan ranges and heaters made by Eugene Munsell & Co. and the Sunshine line of stoves and ranges made by the Reading Stove Works. Mr. Murphy has been in business at the stand he now occupies for many years and has noted the numerous changes which have taken place in the manufacture of stoves. He believes with many others that the steam and hot water heater and the hot air furnace are slowly but surely supplanting the high and medium priced base burners.

A little way up the street from the Eagle are the showrooms of Bernard Loughran. Barney, as his friends call him, does an extensive business in steam and hot water heating, plumbing, gas fitting, &c. In his showrooms is to be found an attractive display of the latest patterns of bathtubs, closets and other plumbing specialties. At the left of his store as one enters can be noticed an interesting display of the French Manhattan stoves, made by Eugene Munsell & Co., and the Magee Grand ranges, produced by the Magee Furnace Company. In his steam and hot water heating contracts he uses the Gurney heaters, which he says have given excellent results.

Charles Reynolds is another enterprising dealer in the historic town of Kingston, and meets the wants of the trade in a prompt and satisfactory manner. He carries a full stock of heavy and shelf hardware, mechanics' tools, agricultural implements, &c., and is alive to the requirements of the times.

T. J. Cusack has recently moved from his old store on Fair street to new and handsomely equipped quarters at 45 North Front street. The main floor is devoted almost exclusively to the display of bathtubs, closets and specimens of fine plumbing. The showroom is fitted up to represent a kitchen of the present day, all of which is sure to attract the passers by and especially those in search of fine kitchen and bathroom furnishings.

One of Kingston's long established stove and tinware stores is that of F. S. Thompson, where can be found one of the largest and most complete lines of stoves in the county. Mr. Thompson has for many years made a specialty of the Acorn line of stoves, ranges and heaters made by Rathbone, Sard & Co. The large store room is almost wholly given up to the display of this well known line of goods. Mr. Thompson also manufactures tin, copper and sheet iron ware and does considerable business in hot air heating.

L. S. Winne & Co. carry on an extensive wholesale and retail hardware business, occupying a spacious building near the post office. The store is modern in construction and systematically arranged, the shelf hardware being cased in boxes with samples exposed. The trade of the concern covers many miles through Ulster and adjoining counties.

In that part of the city known as "Rondout" is the plumbing and tinning establishment of the Canfield Stove Company, who represent the Perry Stove Company and the Rochester Co-operative Foundry Company. In their salesroom is displayed a full assortment of the Argand and Red Cross lines made by the concerns named. The business of the Canfield Stove Company was established many years ago by the late A. P. Canfield. A large trade is done in steam and hot water heating, and the company are agents for the Richmond steam and hot water heaters and the Perfect hot air furnace. They have recently remodeled their building so that it is now three stories in height. The first floor is used for store and office purposes, while the second is given up to the plumbing and tinning

departments. An elevator has been put in, making it easier to handle goods. The store has a frontage on the main street as well as on Ferry street, and with the present facilities the company are in a position to handle a much larger business than heretofore.

Prominently located on Union avenue is the capacious store of Henry E. Weiber, who is engaged in the retail stove and hardware business, giving special attention to plumbing, steam, hot water and hot air heating, &c. His leading lines of stoves and ranges are the Andes, made by the Phillips & Clark Stove Company, and the Welcome, made by the Syracuse Stove Works. Mr. Weiber does considerable business with the large hotels and boarding houses in the mountains and has recently established a branch store at Tannersville, located a few miles up in the Catskills. He is one of those

tools and agricultural implements. They occupy a large building opposite the Mansion House and are on the corner. The firm do an extensive business with the river transportation companies in addition to a large and growing city trade.

John F. Halloran carries on a plumbing and tinning business, making a specialty of the Sterling stoves and ranges, made, by the Sill Stove Works. He carries a complete assortment of tinware and is also the Kingston agent for the Hudson stoves and ranges.

Jansen Hasbrouck carries a full and complete assortment of heavy and shelf hardware and is one of Kingston's leading dealers.

The Buffalo Co-operative Stove Company are represented by James Murphy, who carries samples of different styles of their line, buying them through the Eastern New York agents, Burtis & Co. Mr. Murphy



The U. S. A. Stove Pipe Damper.—Fig. 1.—General View of Damper.



Fig. 2.—Damper Shaft.

men who, starting out with but little capital, has built up a large business and occupies at the present time one of the most finely equipped steam heating and plumbing establishments in that section. He is rather prominent in city politics and recently held an important office.

Somewhat back from the main street is the stove and tin store of Enoch Carter, who has been in the business for many years and enjoys an excellent trade. The leading stoves and ranges which he handles are the Columbia, made by the Keeley Stove Company and the West Shore range, made by the Littlefield Stove Company. Mr. Carter believes in establishing a reputation for the stoves which he handles, for then, he says, it is an easy matter to sell them. "They come in and ask the price, saying 'Send it up' and seem to know at once that it is what they want." Mr. Carter has sold nearly 400 West Shore ranges in the few years he has been pushing them. He does considerable plumbing and tinning and carries a full stock of tin and sheet iron ware—in fact, a kitchen can be completely furnished at his store. His son has an office with him, doing business in stencils and rubber stamps of all descriptions, and assists Mr. Carter with the bookkeeping.

McMillan & Johnson are dealers in heavy and shelf hardware, mechanics'

also does considerable tin roofing and general jobbing.

(To be continued.)

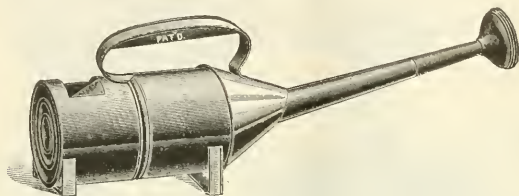
The U. S. A. Stove Pipe Damper.

We show in the accompanying illustrations a damper that is being put on the market by Peck, Stow & Wilcox Company, Southington, Conn., and 27 Chambers street, New York. The damper is made of wrought iron and steel and is light in weight. The manufacturers mention that it holds its place firmly in the pipe and the position is always indicated by the wooden handle. It has a bearing in the pipe from outside to outside and is securely locked in the pipe, which is expanded at right angles to the shaft so that the damper is always free to work easily. The damper plate, as shown in Fig. 1, which is a general view of it, is made with a recess cut out of the opposite edges to carry the burr made in punching the hole when the shaft is inserted. A general view of the shaft is shown in Fig. 2. The holes of the damper are small and can be punched by hand with the steel damper shaft itself. The oval wooden handle is a single piece of hard wood securely riveted to the damper shaft so that it cannot become loose. It is separated

from the pipe by a bell shaped steel spring and a washer. It is pointed out that the spring acts on the pipe, compressing it, thus forming a double spring, either of which will hold the damper firmly in any desired position. It is mentioned that the bearing against the pipe and the corrugations prevent the damper from warping. It will be noticed that the shaft has the thread cut up a long distance so that it may be shortened when used for smaller dampers. The dampers are made in six sizes, from 4 to 7 inches, and are packed, with shafts inserted in the damper plates, in paper boxes holding a dozen each.

The Standard Watering Pot.

The Cleveland Stamping & Tool Company, Cleveland, Ohio, are offering the watering pot here shown. It is ex-

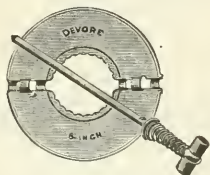


The Standard Watering Pot.

plained that the opening of the can is so arranged that the water will not splash out while carrying or when in use, and that the handle is so placed that it balances the can when filled or empty, so that the pot is much lighter to carry than the ordinary style of watering pot. The pots are made in six sizes—6, 8, 10, 12, 14 and 16 quarts.

Devore's Damper.

An illustration is given herewith of a new damper which has been brought out by L. M. Devore & Co., Freeport, Ill. The cut shows the spindle separated from the body of the damper in order to demonstrate the construction more plainly. The spindle is securely fastened in place by a new locking device, consisting of a coiled spring attached between the handle and a shoulder cast



Devore's Damper.

on the blade. A lug is cast on the spindle, so that when the handle is pushed in the lug will turn in a small opening on the side, the tension on the spring will be relieved and the spindle can be pulled out. The operation is reversed in putting the spindle in. The method of application is very simple, but the device holds the damper rigidly secure to the spindle. The handle is of wood, which is fastened securely to the end of the spindle so that it cannot get loose or drop out.

E. RUDIN has removed his tin shop and stove repair business to 203 West Twenty-seventh street, New York.

American Damper and Damper Clip.

The accompanying cuts represent a damper and a damper clip offered by



Fig. 1.—The American Damper.

the Griswold Mfg. Company, Erie, Pa. The damper, Fig. 1, is referred to as having an improved and strong catch,

an extra long and sharp pointed spindle and an enameled wood handle. The damper is also made with full nickeled handle, in all sizes. The damper is made, in addition to the foregoing, in several sizes, with solid plates for use in gas stove and hot air pipes. The damper clip, Fig. 2, is made with the same spring, handle and catch as the

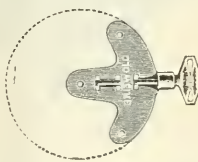


Fig. 2.—The American Damper Clip.

damper. A tall piece is provided when the clip is to be used in large pipes, made of malleable iron, with rivets cast on in one piece.

The Victor Double Trolley Store Ladder.

The illustrations presented herewith show the general appearance and method of operating the Victor double trolley store ladder, which is manufactured by the Coburn Trolley Track Mfg. Company, Holyoke, Mass. Fig. 1 shows the ladder in use, while Fig. 2 shows it pushed up against the sides of the shelves. There are wheels on the bottom of the ladder supporting it on the floor, so that no track is necessary. In Fig. 1 the ladder is in convenient position for use and when pushed back, as in Fig. 2, it is entirely out of the way, or in case a counter is used it is pushed back to the edge of the counter. This change of position is provided for by the carriage at the top, which carries the rollers so that the ladder may slide up and down on the side of the carriage. This adjustment of the ladder is particularly alluded to as an advantage in places

where space must be economized. A section of the ladder is shown in Fig. 3, which is bent at the counter so that it does not project so far into the room. In the illustrations the Victor track is provided for both the upper and lower shelves. It is mentioned that where a ladder cannot roll on the floor this is the most desirable form despite the somewhat extra

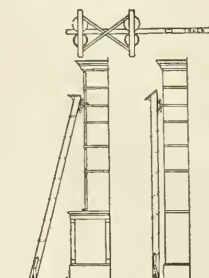


Fig. 1.

Fig. 2.

The Victor Double Trolley Store Ladder. The Horizontal Trolley Store Ladder.

expense. The track, it is stated, may be applied to any shelf below the counter ledge or directly on the edge of the counter and at any shelf above it within 6 or 8 inches of the ceiling or projecting cornice that might hit the top of the ladder. A special claim made for the apparatus is that it runs noiselessly. The iron work on the lad-

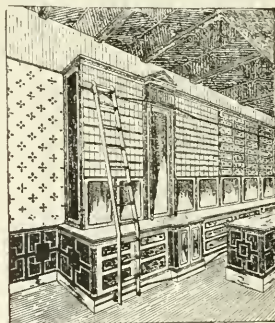


Fig. 3.—Bent Ladder with Two Tracks.

ders is finished in either gold or aluminum bronze. The trolleys have roller bearings requiring neither oil, soap nor other lubricator.

D. A. RIMES, dealer in stoves, hardware and tinware, has moved his business from Texarkana, Ark., to Winthrop, Ark.

A British Parliamentary return just issued states the traffic of last year through the Suez Canal shows an increase of 380,107 tons as compared with that of 1893, and of 327,146 tons as compared with that of 1892. The amount of dues received has risen from \$14,133,472 in 1893 to \$14,755,365 in 1894. The number of vessels which passed through the canal last year was 3352, of which 2386 carried the British flag, being almost precisely the same proportion as for 1893. The percentage of German, French, Dutch, Norwegian and Italian vessels using the canal has slightly declined.

STOVE TRADE NOTES.

The Ohio Stove Trade.

There is scarcely anything in the position of the stove and range foundries in this section of a discouraging nature. As a rule orders for old patterns are fully up to the expectations and the demand for new specialties far exceeds anticipations. Labor is finding fuller and more profitable employment, which is the basis upon which most manufacturers build their hopes of prosperity. The only doubt which may creep in will be through the difficulty in obtaining higher prices for the output of the foundries which must necessarily follow the increased cost of production arising from high wages to operatives and the increased cost of fuel and pig iron, both of the latter having already appreciated, and the tendency is toward a still further advance. But workmanship and merit count for much, and with the fuller resumption of business there will be less disposition to purchase goods upon the erroneous basis of cheapness which recently has too often governed trade.

Very few manufacturers are not running full time, the principal exceptions being where improvements making interfere with full operations. Where figures are furnished respecting the volume of business a steady gain is recorded over the past year and in many cases over the corresponding periods of two years ago.

Special efforts are being made among manufacturers to organize for mutual protection and assistance by controlling or shaping wise legislation and the extension of business, both at home and abroad. There is unusual activity in this respect in Cincinnati at the present moment and the outlook is remarkably encouraging.

The Milwaukee Gas Stove Company,

Milwaukee, Wis., have issued new catalogues of their gas appliances for the season of 1895-6. One of these catalogues is devoted to gas radiators, heaters and parlor grates. It contains illustrations and full detailed descriptions of Perfection gas grates, adapted to the use of any kind of gas; Perfection eight-flue, six-flue and four-flue radiators, intended for artificial gas only, but arranged to burn either a blue or an illuminating flame; asbestos front round heaters in three sizes; polished copper reflector front round heaters in three sizes; a square register heater and a square asbestos heater. The second catalogue is considerably larger, including gas cooking devices as well as heaters. Eleven pages are used in illustrating ranges, a number of new styles having been brought out for this season. The latter

are four-hole ranges, in very handsome dress, with and without water heaters, but furnished with the company's patent self-cleaning burners, adjustable valves and telescoping oven burners, which can be lighted and regulated from the outside. Other forms of cooking goods shown are portable stoves with one or more burners and new styles of hot plates. In addition to the company's full line of heaters they also show in this catalogue their gas kilns for firing china, tinners' soldering furnaces, family coffee roasters, &c. The third catalogue is a photo-reduction of the second, reproducing the entire catalogue in miniature, presenting a very dainty brochure for general distribution by merchants.

Duffy-Trowbridge Stove Mfg. Company,

with foundry and general offices at Hannibal, Mo., have issued their 1895-96 catalogue and price-list of Golden Rule stoves and ranges. The 80 pages of letterpress composing the volume are bound in paper covers, embellished with a side title in old gold printed upon a background of deep chocolate color. The opening pages are devoted to a statement of terms, freight, cartage, telegraphic code, &c., after which attention is given to the Golden Rule range. Among the many features of construction embodied in this stove may be mentioned Duffy's patent reversible front grate, pedal oven door opener, Duffy's patent reversible bottom grate, interchangeable sectional fire back, corrugated bottom oven plate, extra large flues, cut top and center, double ventilated oven doors, large ash pan, draw out hearth, &c. The range is adapted for soft coal, hard coal, coke or wood, and is offered to the trade in four sizes and the usual modifications. The Silver Rule, a new range made both four and six hole, embodies the latest features and is offered at a low price for a range of its class. The Golden Rule for wood only is an attractive four-hole construction, in which are incorporated the modern features. It is offered in two sizes and several styles. The Farmer's Daughter, a four and six hole range for wood; the Golden Rule, four-hole cook stove; the Silver Rule, the Iron Rule, the Home Rule, the Golden Rule, Farmer's Daughter, Cotton Belt and the Elm Rule cooks are some of the other goods illustrated and described. The Monarch steel range is another specialty which is given a place in the catalogue before us. The heating stoves are creditably represented, with the Golden Rule air tight for 1895 in the leading place. This is a richly treated heater adapted for burning soft coal, hard coal or coke. It is of the latest construction and is offered in two sizes. The Golden Rule oak, the Iron Age cannon, the Maple Rule and Glenwood cottage parlor stoves and the Golden Rule Todd complete the assortment. The closing pages are devoted to miscellaneous goods of interest in this general connection.

The Free Press of May 19 contains the announcement that the stove mounters of Detroit, Mich., have entered upon the active operation of the

recent beneficiary feature of their organization. Hereafter those paying the dues will be entitled to \$5 a week when sick and \$100 at death.

ODD PLATES.

IT IS STATED by a local paper that a movement is on foot in Charleston, Ill., looking to the operation in the near future of the Bain Stove Foundry in that place. The names of those associated with the movement are Major Connelly, Ed. Orr and C. F. McFarland.

THE FOX FURNACE COMPANY, 38 Vincent street, Cleveland, Ohio, have been compelled on account of increasing business to seek additional quarters and have taken the store at the corner of Seneca and Noble streets, where they have a space 40 x 100 feet in size. This space, in addition to what they already had, places the company in a position to promptly handle their increasing trade. The new space will be used exclusively for mounting and storage of furnaces.

MARCUS A. DARY of Taunton, Mass., announces that having purchased the patterns of the ranges and furnaces, together with the castings, &c., manufactured by the Warren Foundry Company of Warren, R. I., he is prepared to fill orders for the line of Woodlawn constructions, consisting of the Woodlawn Grand, the Woodlawn A, the Woodlawn B, and the Cornus ranges, as well as the Woodlawn furnace.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., favor us with samples of a new memorandum book which they purpose distributing among the trade during the coming season. The book is of a width which readily permits of its being carried in the vest pocket, and will be found useful to the dealer for entering names and addresses and making notes of the many little things for which a book of this kind is particularly adapted. The covers are embellished with prominent reference to the Peninsular stoves, ranges and furnaces, which are said to be "quick bakers, superior cookers and powerful heaters."

SOME ONE has been good enough to send us a photograph showing a section of the trades procession which occurred at Attica, Ind., on the Fourth of July of last year. The central feature of the picture is a truck or float, bearing the name of L. M. Green and carrying a sample of a richly decorated Garland base burner and a Garland cook stove. The float is arranged with sloping sides, upon which are neatly arranged samples of hardware, tinware, &c., while depending from the base of the float is a skirting embellished with enormous fac-similes of the Garland trade mark. The horses attached to the truck are partially covered with banners carrying the Garland trade-mark.

IN VIEW of the growing popularity and sale of sheet iron air tight stoves in all sections the stove trade throughout the country have watched with interest the outcome of the suit brought by the Hagye Stove Company of St. Louis against the Cole Mfg. Co. of Council Bluffs, Iowa, for infringement of the Hagye patents. The decision of

the United States Circuit Court in its April session at Council Bluffs, Iowa, fully sustained the Hagey claims in their broadest sense, and the decision renders a number of other concerns liable to infringement suits. The Cole Mfg. Co. of Council Bluffs, Iowa, state that they have acquired the right to use such portion of the Hagey patents as were infringed, for the entire term of the patents, and that they will largely increase the output of Cole's air tight heaters, both at their Chicago and Council Bluffs factories.

THE GEM CITY STOVE MFG. COMPANY of Quincy, Ill., have recently had assigned to them a patent for an oven granted to Folkert Kaempen, Jr., and William Wewers of that place. The oven is so constructed that the front, back, top and bottom consist of separate plates so joined together that they may be readily detached. This construction allows each or all of the oven plates to be removed or replaced without disturbing any of the parts forming the stove body proper. It also enables the oven to be readily repaired at slight expense, and there is furthermore an economy of labor in assembling the parts together at the factory.

JOHN B. LEE, proprietor of the Raven Stove Polish Company, Chicago, spent the winter in California on account of throat trouble, returned thoroughly well, and will be found by his customers at the old location, 82 Lake street. He has recently issued a circular giving copies of fine testimonials for Raven stove polish received from very prominent stove manufacturers who are using it.

THE MICHIGAN STOVE COMPANY send us a sample of a stove polishing mitten which they are now prepared to furnish their customers at a very low price, including the customers' names printed on each mitten. They suggest that it would pay stove merchants to give one with each stove sold, thus making a good advertising medium. The mittens are made of strong canvas, with a dauber on one side and a polisher on the other, composed of heavy felt. As the company well say, "It is a good thing."

HOFFMAN & BAUR have recently moved to 279 Lake street, Milwaukee, Wis., where they have secured much larger quarters for their business in furnace and sheet metal work. The building is of brick and consists of three stories and basement, covering a space 25 x 140 feet. The basement is used for the storage of furnaces and other heavy stock, the first floor for furnace pipe and cornice work, the second floor for general jobbing, chimney caps and ventilating department; the third floor for furnace work and mounting. They are very busy at present and orders are increasing. Prospects for an active building season in Milwaukee are very good.

THE DETROIT STOVE WORKS of Detroit, Mich., send us a clipping which they have received from their English agent referring to American stoves in England. The article grew out of a series of letters on "Warmth in the House," published in an English paper, and calls attention to the merits of the Crown Jewel stove, which has for many years past been well known and appreciated in England. Reference is made to the construction of the stove, the cost of fuel per day to run it, directions for operating it, and suggesting that applications be made for catalogues.

J. P. LINDEMANN & SON of Milwaukee, Wis., have issued an illustrated circular of the Gem air tight heater, which is made in two styles, one having Russia iron body and the other wrought steel. The stove has a swing damper

door for the easy removal of ashes and is economical in the use of fuel. It is referred to by the manufacturers as being strong, neat and durable.

THE NEW YORK HOUSE of the Central Oilgas Stove Company report a lively trade in their Radiant central craft oil stove and the Junior Oilgas stove. They are making some large shipments of lamp stoves from their line, which comprises 13 varieties of popular goods.

THE ESTATE of A. FROELICH, 289 Pearl street, New York, have put a long distance telephone in their office for the convenience of the stove trade in the vicinity of New York, and claim that while they cannot ship grates and brick by telephone, they can transmit repairs with dispatch.

THE TOLEDO STOVE COMPANY of Toledo, Ohio, have added to their assortment of stoves and heaters the Palace Gem, a very attractive construction embodying features which render it economical and powerful in operation. The company state that it will work equally well with hard or soft coal or wood, and that some of its features are large flues, unusual amount of radiating surface, perfect control of the fire and capacious cold air tubes. It is of rich design and is offered in a variety of sizes. The company are turning out an interesting variety of stoves of original design, one line of cooks and ranges embracing something like 176 styles. The manufacturers are conveniently located at the meeting point, as they put it, of stove material, with access to 23 railroads. A catalogue which they have issued shows the lines of goods manufactured and calls attention to the various features embodied in their construction. The officers of the company are George G. Metzger, president; George Detwiler, vice-president; J. J. Leonard, manager and treasurer, and George Snyder, secretary.

The Use of Flueless Stoves in Confined Rooms.

The following letter by Thomas Fletcher, the well-known English expert in the manufacture of gas appliances, is taken from an English journal. The letter is interesting, owing to the radical departure made from what it has been customary to accept:

The results of Dr. Haldane's researches, recently placed before the British Association, are of considerable importance to all users of gas for lighting and heating purposes. It has been frequently stated that the presence of carbon dioxide in the air (caused by combustion of gas) is injurious, and the persons who have made this statement, without any direct proof, have repeated it until, apparently, they actually believe it themselves.

It has for many years been well known to experts that a very much larger proportion of carbon dioxide than usually exists in the air can be inhaled without any injurious effect, and that this gas is really as inert as nitrogen, which is by far the largest constituent of the atmosphere, but Dr. Haldane's researches show clearly that an excessively large proportion of carbon dioxide may be inhaled with ordinary air without risk, and with little discomfort. Ordinary fresh air contains about one part of CO₂ in 3000; yet this may be increased one hundredfold before any difference can be appreciated in the respiration; i.e., the presence of 3 per cent. of this gas—100 times the normal quantity—can

only be appreciated by a chemical analysis, and not by persons breathing the mixture. When the percentage increases beyond this the person breathing it commences to pant, but even with 10 per cent. of CO₂ only temporary headache is produced, and there is no danger until the proportion rises to 18 per cent. Foul air in a room is not dangerous from any quantity of carbon dioxide which can be formed by combustion until the combustible itself is extinguished owing to want of oxygen; a candle goes out in an atmosphere containing 18 per cent. of oxygen, instead of the usual 21 per cent., and $\frac{2}{3}$ per cent. of carbon dioxide; i.e., human beings can live and breathe in an atmosphere which will not support the combustion of a candle, and the experiments show that in colliery explosions the carbon dioxide formed is not sufficient to affect life unless the oxygen is almost entirely removed, and Dr. Lorrain Smith found that he could breathe ordinary air from which the oxygen had been removed without inconvenience or visible effect.

We may safely take it for granted that any amount of carbon dioxide formed by the combustion of coal gas in an ordinary room, under ordinary conditions, would be inappreciable, except to delicate chemical analysis, and that the only possible products of combustion from this source which could be injurious are sulphurous and sulphuric acids and carbon monoxide. The two former are unpleasant, but so stretch of imagination could consider them more than this; the last is undoubtedly dangerous, but if the combustion is perfect recent careful researches show that it is not formed.

We appear to be brought to the fact that the products of combustion from gas lights and flueless gas stoves are inert, and, in the absence of sulphur compounds, are inappreciable to those persons who are in the room. The question remains, why is a room in which a flueless gas stove and ordinary gas lights are used so unpleasant, causing, in most cases, cold feet and headache? The answer is, I think, a very simple one. In a room warmed by radiant heat alone, by an open gas or coal fire, the temperature at the floor level will be found in every case at least the same if not higher than that of the upper part of the room. In certain parts near the fire a much higher temperature can be obtained at the floor level, and these parts of the room are always selected, instinctively, by those who wish to be seated in comfort.

With a flueless stove certain classes of burners are absolutely necessary; the flames must be free, and not obstructed by solid matter, such as asbestos, iron or fire clay, any of these causing the evolution of more or less carbon monoxide. Without these any large proportion of radiant heat is, so far as is known at present, impossible; the larger proportion in a flueless stove must, of necessity, be convected heat, which rises with the currents of air formed.

The natural consequence is that the temperature of the floor level will, in almost every case, be lower than that of the upper part of the room, and the old advice to keep your feet warm and your head cool is unattainable.

This does not matter in a bedroom, where the whole body is at one level, and although I am without much personal experience on this point, I believe it will be found that in bedrooms with a chimney which has a down draft flueless stoves may be used with perfect safety and comfort if they are made

with ordinary lighting burners; or, if the light is objectionable, with good atmospheric burners, the flames of which are clear, and unobstructed by any solid matter. My own experience is limited to a period of about three years, during which my private workshop, having no flue, was heated by a stove containing ordinary Bray's union jets. I worked in this for many hours each day, and felt no inconvenience, but I was standing, and constantly moving about. If I had been quietly seated for an hour or two the consequence would have been, as I have repeatedly proved, cold feet and a headache.

The matter is worthy of attention, and no doubt many of your readers will have an opportunity of testing the point raised in cases where invalids with diseases of the respiratory organs are confined to bedrooms in which a fire is impossible, owing to a down draft in the chimney. The question is an important one in many cases of lung disease, which have to be treated in private houses where proper heating arrangements are otherwise impossible. It must be clearly understood that I do not commit myself to any positive statements, except that the matter appears worthy of an extended practical trial; and the results, whether for or against, will be valuable.

THE TRIUMPH ESTIMATE BOOK is the title of a book distributed to the customers of the Craig Reynolds Foundry Company, Dayton, Ohio. It is presented by the company with the view of aiding in keeping a more systematic record of estimates for furnace work. One page is devoted to some suggestions on making estimates and adjusting the size of furnace and flues to be used. Another page gives a proposal and specification for furnace work. This is followed by illustrations showing the different furnaces made by the house and price-list for the same; after which comes an index to the estimates, there being room in the book for 50. Four pages are left for making estimates, leaving space for the name of the customer, the salesman, the class of building and its exposure and the points of the compass. The book is ruled so that each room may be described, with the volume of air required, size of register, quality, price, the length of the round pipe and the length of the square pipe. The second page of the estimate enumerates the items that would be required in the plant. The next two pages are blank for memoranda and bear at the top the important suggestion, "Let your figures show a profit."

Work is actively progressing on the new fortifications at Fort Delaware, in the Delaware River. The old buildings have been demolished, and foundations of unusual strength have been constructed at the south end of the island for the support of two powerful dynamite mounds, destined to guard the entrance to the Delaware River.

The Pennsylvania State Assembly has refused to indorse an appropriation of \$500,000 voted by the State Senate for the improvement of the Delaware River harbor. The city of Philadelphia has already made a generous appropriation to aid this necessary improvement, and provided the State had agreed to bear its share of the expense work would have been begun at once. The refusal of the State to do so has caused an indefinite postponement of the work.

The Legal Control of Ventilation.

BY WALTER B. SNOW.

In no way is the increased appreciation of the necessity of improved ventilation in public and manufacturing buildings better evidenced than in the laws which have been enacted for the purpose of compelling the introduction of ample and efficient means for producing the desired result. The common law recognizes the fact that no man has a right to do aught that affects the peace, the health or the comfort of another. And so we deem it a part of our inborn right that our neighbor shall be prevented from maintaining a nuisance, even if it is upon his own property. We may even complain of a far distant individual who pollutes our water supply at its source, and we expect the manufacturer to provide all proper safeguards against injury to employees from machines which they operate.

It is, then, perfectly reasonable that the patron of a theater should demand that the air therein be maintained in such a state of purity as not to be injurious, and certainly the parent should have a right to insist that his children be provided during their school hours with air that will maintain their mental and physical vigor. And so we have a logical reason for those laws and regulations which are so slowly finding their way onto the statute books of States and into the by laws of towns and boards of education.

To Massachusetts all honor is due for having been the pioneer in the beneficent movement. As long ago as 1888 there was enacted a law reading, "Every public building and every school house shall be ventilated in such a proper manner that the air shall not become so exhausted as to be injurious to the health of the persons present therein." Evidently this law does not definitely determine how to ventilate in "a proper manner," but the enforcement of the law was placed in the hands of the Inspection Department of the District Police, a body of men already well qualified for the work because of their experience in general factory inspection, and the minimum acceptable basis of 30 cubic feet of air per minute per person was adopted.

This has since been followed by a law covering manufacturing buildings as follows: "Every factory in which five or more persons are employed and every workshop in which five or more children, young persons or women are employed, shall, while work is carried on therein, be so ventilated that the air shall not become so exhausted and impure as to be injurious to the persons employed therein, and shall also be so ventilated as to render harmless, so far as practicable, all gases, vapors, dust or other impurities generated in the course of the manufacturing process or handicraft carried on therein, which may be injurious to health."

Under these laws the ventilation in the buildings of the State has greatly improved, and where the inspectors at first found considerable opposition to the enforcement of the law, they now meet with a very ready compliance and a fair degree of appreciation of its desirability.

The State of Connecticut followed this initiative by passing a law of similar import, thus: "Every schoolhouse shall be ventilated in such a manner that the air shall not be injurious to the health of the persons present therein." The regulation regarding factory ventilation is rather broad, reading: "All

factories and buildings where machinery shall be used shall be well ventilated. . . ."

In Ohio, Rhode Island, New Jersey, Michigan and Pennsylvania the regulation of ventilation is placed in the hands of the Inspectors of Factories, but with no definite instructions as to what constitutes acceptable ventilation. The State of New York has a law requiring 250 cubic feet of space for each employee between 6 a.m. and 6 p.m., and 400 cubic feet after 6 p.m. But the inspectors have the power to grant permits for less space provided a room is lighted by electricity and such lights burn during all the hours of labor.

Most of the large cities which are situated in States not possessing such laws have, by the action of their boards of education, to some degree determined the quality of ventilation to be provided in all school buildings within their limits. Thus Chicago and New York, through the engineers of their respective boards of education, design the ventilating and heating systems for their schools on a basis of a supply of 30 cubic feet of air per minute per occupant.

Many of the States have laws requiring the introduction of exhaust fans for certain purposes; thus Minnesota demands that "exhaust fans shall be provided for the purpose of carrying off dust from emery wheels and grindstones." The State of California has no direct law regarding ventilation, but the crowding of the Chinese in their quarter brought about what is known as the "Cubic Air law," which in part reads, "Every person who owns, leases, lets or hires to any person or persons any room or apartment in any building . . . for the purpose of a lodging or sleeping apartment, which room or apartment contains less than 500 cubic feet of space in the clear for each person so occupying such room or apartment, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be punished by a fine of not less than \$50 or more than \$500, or by imprisonment in the county jail, or by both such fine and imprisonment."

In a similar manner the occupant of such room is liable to a fine of from \$10 to \$50 or imprisonment. When the unhealthfulness of such crowding as is common among the Chinese is comprehended, the wisdom of such a law is evident.

Every indication now points to the enactment within the immediate future of further State laws in those States in which the control of ventilation has not heretofore been regarded as a matter to be regulated in this manner, and even where such enactments fail to materialize there will undoubtedly be such increased appreciation of the necessity of a change for the better that individual specifications will stipulate it and bidders will naturally provide for it.

The position of the manufacturers and contractors is, in fact, of importance as regards advancement in improved ventilation, for they are daily becoming better acquainted with its requirements and are more generally recommending apparatus of sufficient size to fulfill all the demands of good ventilation. By forming the habit of always first presenting the best to their possible customers—no matter if something of less capacity be finally purchased—they have it in their power not only to advance the good cause of ventilation, but eventually increase the gross amount of their sales or their contracts.

TRADE REPORT.

The Iron Market.

The Iron and Steel markets may well be pronounced buoyant. There is every proof that the consumption is expanding and the demand has certainly enlarged greatly, since many belated buyers are endeavoring to cover for the future.

The attitude of the Amalgamated Association will be watched with interest. Our dispatches indicate that there has been a prolonged struggle between the conservatives and those eager for a sharp advance.

Coke has sold recently at \$1 35, but it seems likely that the operators will get together and decree \$1.50 at oven, Connellsville, for delivery after July 1.

There is a good deal of activity in all lines of Finished Iron. The buying of Sheets has been heavy and there is a good run of orders for Plates.

In Foundry Iron both Southern and Northern furnaces threaten to make a further advance for all deliveries after July 1.

Pig Iron.—The advance in the price of standard Northern Iron in the New York market foreshadowed in our last report has come, and considerable business has been placed at the higher prices. In fact, buyers have been so quick to accept it and have shown so much disposition to contract ahead liberally that the leading companies have decided to let the advance stand only for June deliveries, and are declining to sell at the figure recently established beyond July 1. The aggregate sales have been quite heavy, and include also round amounts of some favorite Southern Irons. In one case a round block of Southern Iron has been sold for delivery during the balance of the year at a concession from top prices. We quote \$12.25 @ \$12.50 for No. 1; \$11.25 @ \$11.50 for No. 2, and \$10.75 @ \$11 for No. 2 Plain, and \$10.25 @ \$10.50, Northern brands, tidewater delivery. Southern Iron, same delivery, is selling at \$11.75 @ \$12.25 for No. 1; \$11 @ \$11.25 for No. 2; \$10.50 @ \$10.75 for No. 3; \$10.75 @ \$11 for No. 3 Soft, and \$11 @ \$11.25 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10.25 @ \$10.50.

Advices from Philadelphia intimate that the demand for Pig Iron in that district is of the same satisfactory character as has been noted for two or three weeks past, makers having all they can do to make deliveries as rapidly as desired. Prices are firm and Foundry grades hold their own handsomely, but the supply is relatively larger, so that there is less difficulty in placing orders, although prices are fully maintained. The general outlook appears to be of the most encouraging character, and it is not unlikely that further advances will have to be recorded inside the next 60 days. Meanwhile fair average prices at this writing would be for Philadelphia as follows, and 30¢ @ 50¢ less for deliveries at points within 100 miles south or west:

Standard No. 1 Foundry X.....	\$12.00 to \$12.50
Standard No. 2 Foundry X.....	11.50 to 11.75
No. 2 Plain.....	11.00 to 11.25

In the Chicago market another advance of 50¢ is to be made on Southern Iron to-day. Sales have already been made for future delivery covering a part of this advance, which shows that buyers recognize the upward tendency of the times. The demand for Southern Iron has been fair, although not specially heavy. Several contracts have been taken ranging from 200 to 500 tons. Business in local Coke Iron is much better than in Southern, probably because present prices make local Irons comparatively cheap. Quotations, however, are very firm, and an advance is expected daily. Lake Superior Charcoal is looking up; prices are firm, and orders are being more freely placed. They are still small, however, the largest business of the past week in this line being a contract for 300 tons. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	10.50 to 10.75
Local Coke Foundry, No. 2.....	10.25 to 10.50
Local Coke Foundry, No. 3.....	9.75 to 10.25
Local Scotch No. 1.....	10.50 to 11.00
Ohio Strong Softeners, No. 1.....	12.75 to 13.25
Southern Silvery, No. 1.....	12.00 to 12.25
Southern Silvery, No. 2.....	11.75 to 12.00
Southern Coke, No. 2.....	10.50 to 10.75
Southern Coke, No. 3.....	10.25 to 10.50
Southern, No. 1 Soft.....	10.50 to 10.75
Southern, No. 2 Soft.....	10.50 to 10.75

The market for Pig Iron in the Pittsburgh district has been disturbed to some extent by offers of a local interest to sell Forge and Foundry Iron for extended delivery at prices somewhat under the market. For delivery beyond July 1 some furnaces are refusing to quote, while for June delivery prices are ruling as follows, Pittsburgh delivery:

No. 1 Foundry.....	\$11.00 to \$11.25, cash
No. 2 Foundry.....	10.50 to 10.75 "

Activity and strength are the most prominent features of the Cincinnati market for Pig Iron. The sales during the past week have been quite liberal in the aggregate, with a number of round lots that were from 750 to 2000 tons figuring conspicuously among the individual sales. Higher prices are anticipated for Southern Iron, and this may account for the activity among buyers at the moment. It is known that the largest Southern companies have advised agents not to hold open offers longer than 24 hours. The business which has been transacted has been at full basis of values, and when deliveries have extended beyond three months 25¢ per ton additional has been realized. It is noticeable that there is animation throughout the various grades and kinds of Iron, both Northern and Southern make, Forge and Foundry, Coke and Charcoal, for early and late shipment. While the bulk of the Iron sold has been for early delivery—that is, for summer delivery—several transactions have embraced six months, and one sale has been made covering the entire year. Quotations are given as follows:

Southern Coke, No. 1.....	\$10.00 to \$10.25
Southern Coke, No. 2.....	9.50 to 9.75
Southern Coke, No. 3.....	9.00 to 9.25
Southern Coke, No. 1 Soft.....	10.00 to 10.50
Southern Coke, No. 2 Soft.....	9.50 to 9.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	10.00 to 11.00

Hanging Rock Charcoal No. 2.....	10.50 to 10.75
Hanging Rock Charcoal No. 3.....	10.00 to 9.50
Tennessee Charcoal, No. 1.....	13.00 to 13.50
Tennessee Charcoal, No. 2.....	12.00 to 12.50

The St. Louis Pig Iron market is reported as showing increased strength and sales made during the past week have been at full prices. There is no disposition to shade prices at present prevailing, but on the other hand furnacemen seem more than ever desirous of obtaining current rates and in some cases are asking more money. The consumption of Pig Iron continues to show a steady increase, and it is stated the local users of Iron are melting from 15 to 20 % more Iron than during the month of April. Sales during the week have been satisfactory. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.50 to \$10.75
Southern Coke, No. 2 Foundry.....	10.00 to 10.25
Southern Coke, No. 3 Foundry.....	9.75 to 10.00
No. 1 Soft.....	10.00 to 10.25
No. 2 Soft.....	9.75 to 10.00

Metal Market.

Pig Tin.—Prices have continued to steadily decline, and are lower now by 0.30¢ @ 0.35¢ per lb than they were at the date of last week's report. The market has been completely under "bear" control, but operations have been conducted in a manner that prevented panic or anything bordering upon it, although a scarcely interrupted fall of 0.65¢ has taken place during the past three weeks. Considerable Tin has been delivered during the month, but most of the metal represented contract settlements, so that together with the arrivals a liberal stock remains here to work upon. Consumption has been fairly liberal. The price of small lots of Straights Pig from store is quoted at 15½¢ @ 16¢ per lb.

Copper.—Buying has continued fairly, and it is estimated that a business of nearly, if not quite, 1,000,000 lb has been effected. The purchases were for autumn delivery, and the dealings extended over the general line, including Lake Ingot, Electrolytic and Casting stock. Prices advanced further and appear very strong for spot and future deliveries. Appearances are that the market is in good shape. The greater portion of production during the next week has been placed and very little is for speculative account. This and the fact that operations are extending in the autumn months deliveries makes a combination of circumstances that cannot be looked upon otherwise than as reflecting a favorable situation.

No change has taken place in quotations for small parcels of Lake Ingot from store, which rule at 11½¢ per lb. Rumors are afloat in the Copper trade that the Rothschilds have bought the Anaconda mine, the greatest in the world. It has produced 100,000,000 lb in one year and could turn out 50 % more. Rumor has it that the Old Dominion mine in Arizona has also been sold.

Sheet Copper.—A good amount of business is passing in all kinds of manu-

factured copper in this section. Some fairly large orders have been placed during the week by the Cornice trade, and a number of contracts connected with some of the large buildings now in course of erection in this and other Eastern cities are expected to fall in shortly. Inquiry is good, especially for forward delivery, but the manufacturers are not inclined to quote ahead in view of the likelihood of an advance in prices in the early future. Small spot lots of Sheet Copper from store are quoted at the net list price of 14¢ $\frac{1}{2}$ lb.

Pig Lead—The market has been weaker, chiefly under the influence of free offering of Balbach product, delivered, here and in Philadelphia. Common Western eased off under the weight of this pressure, but the amount of sales was moderate. Smaller consumers are buying rather freely and the price for small lots of American Pig from stock is steady and somewhat higher, at 3½¢ @ 3¼¢ $\frac{1}{2}$ lb.

Lead Pipe and Sheet—Business has been somewhat irregular during the week. While the demand for Manufactured Lead is better it still lacks stability, and only a faint disposition is seen on the part of consumers toward buying beyond the measure of current requirements. The outlook, however, for a more liberal scale of business later is regarded as favorable. Many buildings now in hand are not sufficiently advanced to call for their plumbing necessities. These will come into the market in the course of a short time, and should give a good impetus to the trade in Plumbers' Materials, as the amount of building under way and in contemplation in this district is considerable. Prices are firmly maintained at the old list rates heretofore quoted.

Spelter—In this metal there has been a sharp advance. Ordinary Western brands in the wholesale market realized 3.60¢ @ 3.55¢, and offerings at less than 3.70¢ are now moderate. The advance was to very limited offering from primary point. Some firms have withdrawn from the market. Several have sold up their product for the 30 days. Those who offer now ask 3.50¢ in East St. Louis. The current rates for small lots of good Western brands from store has not been changed, but still rules at about 4¢ $\frac{1}{2}$ lb.

Sheet Zinc—Light stocks and a continuance of briskness in the demand keep the price of this material up to the level of last week's advance—namely, 6½¢ $\frac{1}{2}$ lb for 600 lb casks, and 7¢ for smaller quantities from store. The supply of Sheet Zinc in dealers' and jobbers' hands in this section is extremely light, and prompt shipments of any size are almost impossible to be had.

Antimony—Of moderate quantities the movement has been fair, mainly at about 9¢ for Cookson's and 8¢ for Hallett's in small parcels.

Nickel—Sellers' figures remain at 35¢ @ 40¢, according to quantity and terms.

Tin Plate—While the market displays no new features of any importance, business has been very fair, although somewhat uneven. Ordinary Cokes for canners and can makers uses have secured a good amount of attention during the week, and several good contracts for future delivery have been placed at prices which, in some cases, compare favorably with those lately obtainable. American Ternes are moving fairly well,

although the demand from the roofing trade is not yet up to expectations. General buying has been by all accounts well divided between American and foreign stock. Prices in all lines have undergone very little change, but they are rather firmer, with a more cheerful feeling among dealers in regard to the probability of higher rates before very long.

A special London cable dispatch of May 29 to *The Iron Age* reports on the British Tin Plate market as follows: The Tin Plate market has been 'steady. The outlook is better. Fair business in squares and odd sizes. Basometer at 9/8 basis. Better inquiry for Oil sizes. Several works restarting. Good orders at buyers' limits. Prices, f.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20	9/3 @
Siemens Cokes, IC 14 x 20	9/4 1/2 @ 9/8
Ternes, 20 x 28	18/2 @ 22/6
Charcoals, IC 14 x 20	11/ @ 13/6

Sheet Iron—Mills producing Black and Galvanized Sheets are well sold up for 30 and 60 days, and quotations are made for immediate acceptance only. Until the wage scale for sheet mills, which expires on June 30, has been arranged for another year, makers will be very guarded in making contracts for extended delivery. Mills are in many cases absolutely refusing to make quotations, and jobbers experience considerable difficulty in getting orders filled with any regularity. Galvanized Sheets are in very heavy demand, and jobbers' stocks are badly broken. Prices for this material have at last moved up. Small lots of Galvanized Iron from store are quoted by jobbers at 75¢ off, and of No. 27 Common Iron at 2 80¢ $\frac{1}{2}$ lb.

Chicago Report.

Scrap—The demand is growing larger. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb
No. 1 Wrought Scrap	\$7.50	....
Machinery Cast	6.00	....
Malleable Cast	6.00	....
Stone Plate (free of burnt) ..	4.00	....
Burnt Iron and Grate Bars ..	2.50	....
Sheet Iron and Hoops	2.00	....
Flow Steel and Breaking	3.00	....
Stock	2.50	....
No. 2, such as Shovels, Hoes, &c	2.50	....
Old Boilers—whole (Iron) ..	3.00	....
“ (Iron)—cut in single .....	....	....
Sheets and Rings	5.00	....
Old Gas-Pipe and Boiler .....	....	....
Tubes	5.00	....
Cast Borings	3.25	....
Turnings	4.00	....
Horseshoes	8.00	....
Copper Wire and Heavy	8 ¢	....
Copper Bottoms	7 ¢	....
Copper Clips	7 1/2 ¢	....
Heavy Brass	6 1/2 ¢	....
Light Brass	3 1/2 ¢	....
Pipe Lead	2 1/2 ¢	....
Tin Lead	2 1/2 ¢	....
Zinc	2 1/2 ¢	....
Rubber	4 ¢	....

Anthracite—Business is quite fair for the season. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.	\$4.00	\$4.75
Milwaukee, Wis.	4.60	4.75
Kansas City, Mo.	7.80	7.95
Council Bluffs, Iowa.	7.80	7.95
Lincoln, Neb.	7.95	8.10
Sioux City, Iowa.	7.80	7.95
Aberdeen, S. Dak.	7.85	8.00
Dubuque, Iowa.	5.90	6.05
Madison, Wis.	6.10	6.25
St. Paul, Minn.	7.10	7.25
Burlington, Iowa.	6.10	6.25
Des Moines, Iowa.	7.60	7.75
Davenport, Iowa.	5.90	6.05
St. Joseph, Mo.	7.80	7.95
Leavenworth, Kan.	7.80	7.95
Omaha, Neb.	7.80	7.95

Colorado Anthracite.	
COLORADO FUEL & IRON COMPANY.	
Denver	\$8.00
Pueblo	8.00
Colorado Springs	8.00
Leadville	8.00
Cheyenne, Wyo.	10.00
All points between Denver and Missouri River	8.85

CONDITION OF THE Hardware Trade.

THE SPECIAL FEATURE of the market is the firm tone and upward tendency which characterizes goods which lie near the raw material, owing to the advanced prices ruling for Iron and Metals. Slight advances are thus caused in many heavy goods as well as in those in which Copper is an important material. The consummation of the negotiations between the Wire Nail manufacturers and the reaching of a similar agreement by the Cut Nail manufacturers are important facts, securing material advances in these lines of goods. The fact that increased wages are being paid in many mills and factories is also a significant feature of the situation, and there are indications of labor agitations in other lines, so that it is not improbable that there will be an effort on the part of workmen to secure more or less general advances. The influence of this has not yet been felt to any important degree in General Hardware, and the fact that comparatively few factories are working full time is referred to as bearing against the reasonableness of such demands from the workmen at the present time. While the trade are prompt to recognize the improved feeling and the better prices which characterize many lines, there is a disposition on the part of careful and conservative men to avoid an exaggerated view of the improvement and to see whether or not the present tendency develops into a general advance on the whole line and a material increase in the volume of business. While the announcements of higher prices on heavy goods and such others as have been advanced on account of the increased cost of raw material and perhaps higher wages are excellent indications of an improved condition, it remains to be seen whether or not the trade are going to purchase freely at such advanced prices. With some houses there is certainly a disposition to hold back a little and see whether or not the new prices will be firmly maintained, especially as the next month or two will be likely to try the tone of the market. If during the summer months prices remain steady for such goods, and especially if they have an evident firmness and strength, the trade will regard the outlook for the fall business as exceptionally bright, and in view of all the circumstances merchants generally are taking a very hopeful view of the outlook, and express freely the opinion that the turn has come and that we are on the eve of more prosperous conditions. In most lines of General and Shelf Hardware there has been no improvement in the matter of prices, and it is only in exceptional cases that the manufacturers have been withdrawing some of their extreme quotations. The trade are, however, placing orders much more freely for such goods, the conviction being general that prices are much more likely to advance than to recede further. Manufacturers are in most such lines freely accepting special orders for

early delivery. The fact that throughout the country there is a marked increase in building operations, with the prospect of a good degree of activity in this direction, is very satisfactory, and advices from the retail trade in many sections indicate that there is a perceptible improvement in their current business. This is reflected in the orders which they are sending in with something of the old time freedom to the jobbing houses. The situation is, on the whole, more satisfactory than for a long time and the outlook promising.

Advices from Chicago.—The demand for Shelf Hardware keeps up its volume. One of the local jobbing houses reports that May will be the banner month in their history. The sales of this month in dollars and cents will surpass those of any previous month. This means, in view of the lower prices of goods, a vastly increased quantity of merchandise handled as compared with former years. Seasonable goods are not moving so freely, as the weather recently has been unfavorable. The May trade this year came in April on account of the excessively hot weather at that time. An improvement is perceptible in Builders' Hardware, Tin Plate, &c. The demand for Tin Plate is daily increasing. Manufacturers' agents are in receipt of very large orders, numerous customers increasing their purchases far beyond their usual requirements. Jobbers note the tendency among their customers to place orders for future delivery on such merchandise as Sheet Iron and Steel and other articles which have been prominently affected by the stiffening in raw material. Tinware and House Furnishing Goods are in much better demand than last week.

Notes on Prices.

Wire Nails.—We have to announce the successful consummation of negotiations which have been in progress for several months between the manufacturers of Wire Nails. As a result, the market is in exceptionally good condition and prices are materially higher. A strong organization has been formed, which includes practically all the manufacturers who are actively producing this line of goods, and it is understood that arrangements have been made by which the co-operation of some other concerns is secured, who might otherwise exert a disturbing influence on the market. There are, however, a few matters which at the present time are unsettled, but it is anticipated that these will be satisfactorily adjusted. There is an excellent understanding between the different manufacturers, and all the difficult questions connected with the formation of such an organization, such as the production allotment, schedule of prices, &c., have been satisfactorily settled. The importance of limiting the production of Nails to the requirements of the trade has been recognized, so that the undue accumulation of Nails, by which the stability of the market might be endangered, will be prevented. The estimated demand for each month will be determined by the Executive Committee, by whom also the prices at which Nails are to be sold will be determined month by month. The new arrangement contemplates adequate and reasonable protection for the jobbing trade, through whom the manufacturers expect principally to market the goods. The advance in price is referred to by the manufacturers as required by the increased cost of the raw material and

the upward tendency of wages. It may seem a large advance over the low prices which have recently been ruling, but there is no doubt that such prices were unreasonably low and unprofitable, and it is certainly desirable that the goods should be sold at figures which will yield the manufacturers a reasonable margin.

This arrangement goes into effect with a market that is comparatively bare of goods, the stocks in the hands of the trade being rather light. The jobbers who have goods purchased at lower figures are unquestionably in a position to undersell the manufacturers if they desire to do so, but an excellent opportunity is certainly afforded them to market such stocks and realize a handsome profit. It is too early as yet to announce the prices at which small lots will be sold from store, as the wholesale prices announced do not go into effect until June 1. We are advised, however, that the New England jobbers have determined upon \$1.25 as their price for carload lots at factory and \$1.60 for small lots from store.

Miscellaneous Wire Nails, in papers, have also been advanced, the prices of these goods being determined by the same organization.

Advices from Chicago.—Manufacturers' prices have been advanced to the equivalent of \$1.35, Chicago, for carload lots for delivery up to July 1 only. Buyers who take 1000 kegs for delivery during the month receive a concession of 5 cents. The restriction is made in view of the advancing prices for raw material, which may necessitate another raise during June. Manufacturers state that the advance made is wholly warranted by the circumstances. They had for a long time been actually selling below cost. The advanced price of Wire Rods is now fully \$5 per ton, besides which wages have been raised 10 per cent. in all Wire Nail factories. Large inquiries are in the market for Nails and a good trade seems assured, because stocks in second hands are known to be light. Jobbers' prices were advanced during the week to \$1.35 for small lots. It is expected that within a short time their price will be put at \$1.50 in order to cover the advance made by the manufacturers. The demand for small lots has been very good after each advance, but jobbers have been careful not to take business too freely until manufacturers' prices were finally settled.

Cut Nails.—The Cut Nail market is strong and prices are higher under the agreement made by the manufacturers and the organization which has been formed for the regulation of the market. It is expected that Cut Nails will thus be maintained in price in sympathy with Wire Nails. Prices from store in New York have not yet been determined, the arrangement between the manufacturers going into effect June 1.

Advices from Chicago.—Manufacturers report a continuous increase in business, with orders coming in from unusual sources. Trade has lately been received from localities long occupied exclusively by Wire Nails. Quotations from factory at present are withdrawn, but jobbers have moved their prices upward in anticipation of higher factory prices and are now quoting \$1.25 for small lots from stock.

Barb Wire.—The Barb Wire market continues steady, with something of an upward tendency. The demand is large and there is some delay in filling orders.

Advices from Chicago.—Manufacturers have experienced a very heavy demand since last report. It now looks as if the mills will be able to run steadily through the summer and not shut down on July 1 as usual. The old difference of 35 cents is firmly maintained between Painted and Galvanized, owing to the stiff advance in Spelter. Jobbers quote small lots of Painted at \$1.70 and of Galvanized at \$2.05.

Brass Sheets, Wire, &c.—On account of the higher prices ruling for the raw material an advance of 5 per cent. has been made by the manufacturers of Brass Sheets, Rods and Wire. The market is characterized by a firm tone and an excellent feeling prevails.

Copper Goods.—In sympathy with the improved condition of the Copper market manufactured Copper is held more firmly, and an advance is anticipated before long provided the present tendency of the raw material is maintained. Copper Wire is held at higher prices than a short time ago and the manufacturers are considering the feasibility of another advance in the near future.

Cordage.—The Rope market is firm, with something of an upward tendency, but at the same time is characterized by some irregularity in prices. The quotation of 6½ cents base for Manila represents the price at which large lots are quoted, f.o.b. factory or New York. Sisal is held at 4½ cents, but this figure is sometimes shaded. There is at present practically no market on New Zealand. Jute Rope is quoted at from 4½¢ to 5¢. Cotton Rope is feeling the effect of the advance in raw material, but prices have not advanced in proportion to the higher figures ruling for cotton. The best is selling at 12¢, the medium at 9¢ and common at 7½¢.

Wrought Iron Goods.—There is a better feeling in the market for Wrought Iron Goods, owing to the fact that some of the manufacturers who have been making the cheaper grade and naming very low prices have either practically withdrawn from the market for a time or are refusing to fill orders at their extreme quotations. There is not, however, entire uniformity in the prices at which these goods of the lower grade are selling, but the situation is more satisfactory, with a prospect of still further improvement. No change has been made in the prices of the first quality goods.

Screws.—The manufacturers of Screws report an excellent business and an improved tone in the matter of prices. While there is not entire regularity in the prices at which the different manufacturers are selling, there is a general tendency toward firmness. The trade, recognizing this fact, are purchasing quite freely and the volume of business is good.

Steel Hollow Ware.—There is at the present time an active competition between some of the manufacturers of Steel Hollow Ware. Prices are somewhat irregular and on the whole the market is unsettled.

Nuts, Washers, &c.—While there has been no formal advance in these lines some at least of the manufacturers have withdrawn extreme prices and the market is in a little better condition. It is, however, conceded that the present prices are so low that the continued improvement in the iron market, espe-

cially if complicated with labor agitations, will be likely to result in higher prices.

Nestable Strainer Pails.—A description of these Pails, which are manufactured by Sidney Shepard & Co., Buffalo, N. Y., was given in *The Metal Worker* of the 18th inst. These Pails are sold from the following list, which is subject to a discount of 60 per cent. to the trade:

	Per dozen.
12 quart	\$13.00
14-quart	14.25

Glass.—The productive capacity of Glass factories shows a gradual decrease, the pots or their equivalent now in operation being 1234, or about one-half of the number of pots in the United States. Prices are being maintained as a general rule and factories report a fair demand. It is understood that the National Plate Glass Jobbers' Association recently held a meeting in Chicago, and agreed to a discount of 60 and 10 per cent. up to 10 square feet, and 60 and 20 per cent. discount above 10 square feet. Stock is being reduced by a larger demand and the shut down of the factories.

Old Metals.—The demand for this class of material is fairly active. Scrap Iron in particular exhibits a brisk movement, with some scarcity of material in certain lines. Prices on small lots have not, however, been advanced by dealers. The following quotations represent the prices now being paid for lots of this character by dealers, New York delivery:

Heavy Copper.....	lb 73¢
Light and Tinned Copper.....	lb 74¢
Heavy Brass.....	lb 5¢
Light Brass.....	lb 4¢
Lead.....	lb 28¢
Tea Lead.....	lb 24¢
Zinc.....	lb 24¢
No. 1 Pewter.....	lb 9½¢
No. 2 Pewter.....	lb 4½¢
Wrought Scrap Iron, gross	
ton.....	\$7.50 @ \$8.00
Heavy Cast Scrap.....	gross
ton.....	7.50 @ 8.00
Stove Plate Scrap.....	gross ton 5.00
Burnt Iron.....	gross ton 3.50

Old Rags, Paper, &c.—The market shows no change from last week. Business is fairly active, and prices remain substantially the same for all lines of Paper Stock. Dealers' purchasing prices, New York delivery, rule as follows:

No. 1 White Rags.....	lb 3	@ 3½¢
No. 2 White Rags.....	lb 2½	@ 2½¢
Mixed Rags.....	lb ¼	@ 1¢
Blues and Sds.....	lb 1	@ 1½¢
Hard Sized White Shavings.....	lb 2½	@ 2½¢
No. 1 White Book Shavings.....	lb 1½	@ 2½¢
No. 2 White Book Shavings.....	lb 1	@ 1½¢
Light Book Shavings.....	lb 1	@ ½¢
No. 1 Mixed Shavings.....	lb ½	@ 1¢
No. 2 Mixed Shavings.....	lb ½	@ ¾¢
No. 1 Printed Books.....	lb 1	@ 1½¢
Ordinary Mixed Books.....	lb 1	@ 1½¢
Newspapers.....	lb ½	@ 3½¢
No. 1 Manila Paper.....	lb ½	@ 1¢
No. 2 Manila Paper.....	lb ½	@ ¾¢
Bogus Paper.....	lb ½	@ ¾¢
Common Paper.....	lb ¼	@ ¾¢
Straw Chips.....	lb ¼	@ ¾¢
Binders' Clippings.....	lb 1	@ 1½¢
Fate Butts.....	lb 1½	@ 1½¢
No. 1 Jute Bagging.....	lb 1	@ 1½¢
Mixed Bagging.....	lb ½	@ 1¢
No. 2 Bagging.....	lb ½	@ ¾¢
Hemp Twine.....	lb 2	@ 2½¢
Manila Rope.....	lb 2	@ 2½¢
Jute Rope.....	lb 1½	@ 1½¢
Mixed Rope.....	lb ½	@ ¾¢

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, gross	3	@ 3½¢
Rubber Shoes, carloads, delivered at factory, gross	4½¢	
Rubber Shoes, less than carloads, gross	4½¢	
White Wringer Rolls, gross	3½¢	
White Syringes, gross	3½¢	

Trade Notes.

THE FRECKINRIDGE TIN CAN COMPANY, Toledo, Ohio, with a capacity of 40,000 cans daily, are running their factory full for 24 hours a day in order to meet the recent heavy increase in orders from the canning trade. The company are already some 30,000 gross behind their orders, and have been, in consequence, compelled to refuse to enter into any large contracts for early delivery at present.

THE WHITING FOUNDRY EQUIPMENT COMPANY of Chicago recently shipped to Cuba one of their No. 1 Whiting cupolas complete with 40 foot stack. They have also an order for car wheel foundry equipment for a Brazilian firm.

THE ZIMMER MFG. COMPANY of Chicago, Ill., have been granted license to incorporate, with a capital stock of \$6000, the incorporators being M. C. Rasmussen, Charles F. L. McKinley and J. H. Breckenridge. The new company will manufacture hydrants.

Legislation on Unsanitary Buildings.

An important clause, embodied in the new law recently passed by the State Legislature of New York and approved by Governor Morton, relates to the condemnation of unsanitary buildings in New York City. The clause, which is based upon English legislation and experience, was suggested by the special Tenement House Committee, appointed by the Governor a year ago. It reads as follows: "Whenever in the opinion of the Board of Health of the Health Department of the city of New York, any building or part thereof in the city of New York, an order to vacate which has been made by said board, is, by reason of age, defects in drainage, plumbing, infection with contagious disease, or ventilation, or because of the existence of a nuisance on the premises, which is likely to cause sickness among its occupants, or among the occupants of other property in the city of New York, or because it stops ventilation in other buildings, or otherwise makes or conduces to make other buildings adjacent to the same unfit for human habitation, or dangerous or injurious to health, or because it prevents proper measures from being carried into effect for remedying any nuisance injurious to health or other sanitary evils in respect of such other buildings, so unfit for human habitation that the evils in or caused by said building cannot be remedied by repairs or in any other way except by the destruction of said building, or of a portion of the same, said Board of Health may condemn the same and order it removed, provided the owner or owners of said building can demand a survey of said building in the manner provided for in case of unsafe buildings, and may institute proceedings in the Supreme Court, in the County of New York, for the condemnation of said building. Said proceedings shall be instituted and carried on in the manner prescribed by the Code of Civil Procedure, except as modified by this act. Upon the institution of said proceedings the owner of said building, or any person interested therein, may in his answer dispute the necessity of the destruction of said building or part thereof as the case may be. In such case the court shall not appoint commissioners unless proof is made of the necessity of said destruction."

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THE METAL WORKER.

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June Conventions.

Our readers will be interested in the several conventions of trade associations which meet during the month of June. A quarterly meeting of the Central Supply Association will be held at Detroit on June 11 and 12. During this same week the convention of the National Association of Master Plumbers and of the Master Steam and Hot Water Fitters' Association of the United States will be held at Philadelphia. While these conventions are in session members of the American Society of Heating and Ventilating Engineers are invited to an informal meeting at the Continental Hotel. Immediately following these conventions, it is reported that a meeting of the Association of House Heating Boiler Manufacturers will be held at Geneva, N. Y., on June 30. During the week of the conventions in Philadelphia the Pennsylvania master steam fitters will hold a meeting at the Continental Hotel, to form a State Association of Master Steam Fitters. The plumbers of New Jersey are invited to meet at the Continental Hotel on the 12th inst., for the purpose of forming a State Association of Master Plumbers.

The Debs Decision.

The recent ruling of the Supreme Court of the United States, whereby it sustained the action of the lower court in passing sentences of imprisonment on Eugene V. Debs and his official associates of the American Railway Union, for their action in the Pullman trouble of last summer, is very important in its effect upon the operations of labor organizations. The offense for which Debs and his coadjutors suffer was the ordering of a general strike of the members of the union. The Supreme Court holds that this proceeding was a violation of the law, being designed to cause a willful obstruction of interstate commerce. Such obstruction is regarded as a public nuisance, to

be suppressed like any other nuisance. Just as the courts have jurisdiction over a private nuisance, affecting the individual, so, as in the present case, they are empowered to act where the nuisance affects the people at large. "It surely cannot be seriously contended," the Court says, "that the Court has jurisdiction to enjoin the obstruction of a highway by one person, but that its jurisdiction ceases when the obstruction is by a hundred persons." The effect of this ruling is to practically deny the right—which has been hitherto generally conceded—of labor organizations to make even peaceful efforts to inaugurate a strike which would involve interference with the operation of a railroad. Such action, the Court decides, constitutes a public nuisance affecting the people at large, and, therefore, organized bodies of workmen can be legally enjoined from efforts to bring such an event to pass.

The Macy Manual Arts Building.

A few weeks ago the Macy Manual Arts Building of the Teachers' College, this city, was formally opened for the first time to the public, giving an excellent opportunity of observing the benefits derived from a course of study pursued at this institution. The building is 147 feet long, 71 feet wide, five stories and basement in height and equipped with all the appliances necessary for the purpose. In the basement is the Department of Elementary Metal Working, including the foundry and forge, adjoining which is the polishing room, where the final touches are given to the pieces turned out. Four rooms are devoted to metal working, chipping and filing, soldering, molding, casting and forging. On the first floor are offices, conference rooms, library, lecture room, machine tool room and wood turning room. The second floor is occupied by the Department of Elementary Manual Training, in which the rudiments of designing and color working are taught; the Architectural Department; the joining room for cabinet making and carpentering, and the wood carving room. The third floor is devoted to the Department of Mechanical Drawing, Clay Modeling, &c.; the fourth floor to the Museum and Art Department, and the fifth floor to the lecture room. At the formal opening of the building the teachers and pupils gave exhibitions of wood carving, joining, turned wood work, iron work, clay modelling, mechanical and architectural drawing, charcoal and pen and ink sketching, color work and needle work. The school will be open to receive pupils in September next, and

will be under the direction of a committee of the Teachers' College faculty, consisting of the Board of Directors of the Manual Training and Art Education. The aim is first to train teachers and supervisors of manual training and art students, and second to give instruction in manual training and art work to students pursuing courses in other departments of the college, to special students and to pupils in the Horace Mann School, the latter being the academic part of the college.

Improvement in business is a mockery to salesmen whose services are dispensed with because no more orders can be taken for an indefinite time. This fate has suddenly overtaken men in various branches of trade. For the past two or three years they have been working perhaps more diligently than ever, and at reduced salaries, because orders were so hard to get. No one longed for an improvement in business more fervently than they. The better demand finally came, but in a deluge and not in a gentle, kindly, invigorating series of showers, and it has flooded them out of employment.

In the current number of the *North American Review* Mr. Mulhall, the English statistician, furnishes some interesting statistics in regard to the wealth and resources of the United States. He points out, by careful comparison between the different conditions in different countries, that an ordinary farm hand in the United States raises as much grain as three in England, four in France, five in Germany, or six in Austria. One man in America, he states, will produce as much flour as will feed 250 people, whereas in Europe one man on an average can feed only 30 persons. He shows also how the intellectual power of the people of this country has kept pace with its industrial and mechanical progress, 87 per cent. of the total population over ten years of age being able to read and write.

The Pennsylvania Railroad will shortly carry out a series of tests of considerable interest in respect of the comparative efficiency and economy of steam and electricity as a motive power in railway service. For this purpose the company have selected the Mount Holly Branch of the Camden & Burlington Railroad, extending from Camden to Burlington, N. J., a distance of seven miles. The equipment of this line as a trolley road has been in progress for some months past. As at present operated by steam the line is a source of greater expense than of gain to the company. If it is found that expenses can be reduced by the adoption of electricity on this line, it is likely that the trolley will supersede steam on a number of other small branches owned by the company in different parts of the system.

THE LETTER BOX.

Economizing Chimney Heat.

From W. W., *Freeland, Pa.*—I would like to have a little information with reference to a chimney which a customer of mine wishes to have put up in a building four stories high. He intends to use 7-inch wrought iron pipe, and run it through the center of a 30-gallon boiler on each floor, so that the heat which is ordinarily lost in the chimney can be utilized for heating water. After passing through the boiler on the highest floor the chimney will continue on through the roof.

Note.—We shall be glad to have our readers discuss this chimney problem. It would seem that a 7-inch smoke stack is rather small, for we suppose that there will be fittings introduced into the wrought iron pipe so that the stoves on each floor may be connected into it. The strength of the draft or the rapidity with which the smoke passes through the chimney depends largely on temperature, and if this is reduced to too great an extent the smoke will fail to rise and pass out of the chimney. The effect of incasing the pipe with a cylinder filled with cold water will be to reduce the temperature of the products of combustion very materially. We do not know of a case where such an experiment has been tried. Boilers are often set vertically in an ordinary brick chimney, and located so that the pipe hole in the chimney through which the hot smoke from the stove enters is directly below the boiler and the smoke must pass up alongside of it. In such cases the heat from one stove, as run in the average kitchen, will heat the water to a temperature suitable for the majority of household purposes. From this it seems probable that there will be sufficient heat to raise the water to a satisfactory temperature in an apparatus similar to that proposed; but it is hardly likely that a 7-inch pipe will be large enough for the work. Larger pipe would give better satisfaction, providing the expense of the proposed arrangement does not prohibit its use.

Sheet Zinc for Eave Troughs and Conductors.

From N. K. W., *Stoneboro, Pa.*—Will the Letter Box readers give their views regarding the use of sheet zinc as a material for eave troughs and conductors. During an experience of over thirty years I never saw or heard of a job where sheet zinc had been used for outside work until I came to this place. One job is said to be of zinc, and has been in use about eight years. As I have not examined it I am unable to report regarding its condition. On account of the sulphur in the soot from the coal used here, tin spouting will not last over two years, and it is said that galvanized iron is but little better. I would like to get the experience of the craft generally regarding the matter.

Show-window Fountain.

From J. W. S., *Wascoutah, Ill.*—I would like to see published in the columns of *The Metal Worker* illustrations and description of a show window fountain. I think it would interest many others as well as myself.

Answer.—In the first place we will describe a fountain invented by Hero of Alexandria, who lived about 250 B. C. In Fig. 1 is shown a sectional view

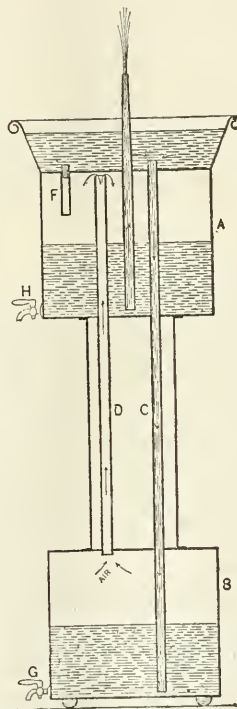


Fig. 1.—Sectional View of Hero's Fountain.

the top, as shown. The tube F is provided with a cork or stopper, and leads from the bottom of the open dish or pan at the top to the tank A. The stopper having been taken out of this tube the tank A is partly filled with water. The stopper is then replaced, and the open dish at the top is nearly filled with water. As the water passes through the tube C into the tank B the air is expelled and passes up the

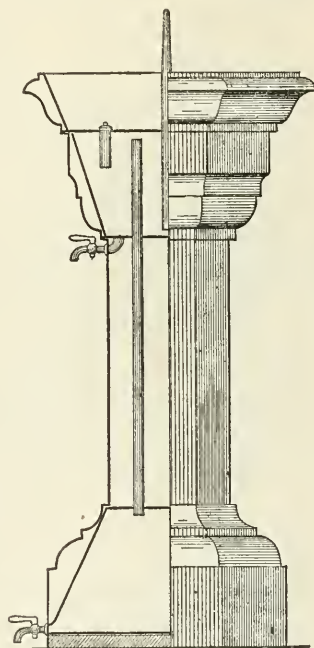


Fig. 2.—Broken View of Fountain in Sheet Metal with a Portion of the Exterior Broken Away.

of the fountain, while Fig. 2 represents a broken view of the same device, and indicates the construction in such a way as to enable those of our readers who desire to make one. The apparatus consists of an open dish and the two closed tanks A and B, arranged as shown in Fig. 1. The open dish placed at the top communicates with the lower part of the tank B by means of the tube C. Another tube, D, leads from the top of tank B to the upper part of tank A. The discharging tube passes through the open pan at the top to the lower part of the tank A. The discharging tube is made tapering at

tube D into tank A. The air, being compressed in tank A, presses on the water and forces it out through the jet. This operation is continuous until the water in tank A is exhausted. The water in tank B can be drawn out at G, and the open dish or pan at the top and the tank A are again filled. It will be understood that the operation of the fountain depends upon the height of the column of water in the tube C of Fig. 1.

In a previous issue of *The Metal Worker* we presented a description, with engravings, of a fountain contributed by George H. Lee of Exeter,

Neb., and which is as follows: "I send you diagrams of a tin fountain which I recently made, and which is exceedingly simple in construction. B and C, Fig. 3, are two cans, the bodies of which are formed from a sheet of 20 x 28 roofing tin cut in two pieces, 10 x 28 inches. H H, F F, G G are tin tubes formed on gutter beader and soldered perfectly tight. A is a common 12-inch wash basin, a 2-inch hole in the bottom, under which is soldered a 1½-inch can screw top, N. The overflow tube H extends through a hole in can screw under basin, through can B to within ¼ inch of the bottom of can C. Tube F extends from within ¼ inch of the top of can B to ¼ inch through can

when it can be drawn off at J and the operation repeated. A nozzle may be made from a hollow nickel stove knob and the small can screw punctured at top with a very small hole. The fountain will throw a stream 12 inches high for about six hours, and with the basin filled with rocks and moss, and surrounded with plants, produces a pleasing effect."

Trouble with Galvanized Iron.

From W. A. S., Kentucky.—For the past twelve years we have been making galvanized iron tanks for water coolers, and never before have we had any trouble with water tasting from being in them. This year, however, we are using some 24-gauge galva-

examined the tank and found such to be the case, and in less than eight months after it was in it was literally eaten up with rust. The same range had already been in use fourteen years, and had been supplied with a galvanized tank at the time it was put in use, made from No. 18 gauge, and galvanized after it was made. This tank lasted fourteen years, and when it was worn out was not in as bad condition as ours was after it had been in use six months. We wrote the manufacturer to know if he could furnish another galvanized tank as good as the one on the range when put in and he replied in the negative. Our foreman seems to think that the first tank was made out of the best bloom charcoal iron, and the second, made out of the so-called best bloom charcoal iron, was in reality made from soft steel, which accounts for its rusting out so soon. We know that ordinary galvanized iron tea kettles, galvanized after being made, and made of pretty heavy material, will not last any time. Can you explain why the first tank lasted so well and why galvanized iron will not last at all when used with hot water, though it is durable when used with cold water?

Casting Statuettes.

From J. R. H., Hazelton, Pa.—I would like to get information on two important points in casting soft metal statuettes. I am at the present time using lead, tin and antimony, and I have trouble in getting the alloy to flow through the brass molds easily and fill them up. One of the figures I am casting chokes up, and I probably have to pour ten to get one good one. I have difficulty in making the figures to a certain degree flexible enough to be bent without breaking and yet stiff. The next thing I want is to be able to give the figures a beautiful bright gold color that will not readily fade or tarnish and that cannot easily be rubbed off. I wish to do this in the easiest way and hope to accomplish it by the immersion process—that is, to dip the figure in a solution without the use of a battery.

Extending A Heating System.

From TRANSPILATED, New York.—The readers of *The Metal Worker* will doubtless be interested in the changes

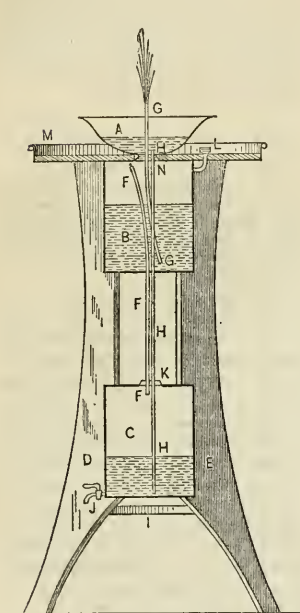


Fig. 3.—Sectional View of Fountain as Made by Mr. Lee.

screw K. Tube G extends from within ¼ inch of bottom of can B through can screw N, ending with a nozzle even with top of basin. L is an inch tube fitted with small can top for filling can B. Can screws must be washed with leather and all seams and joints made air tight. M is a circular top with a wired tin rim 1 inch high and serves as a flower stand. The diagram shows form of legs, of which there are three, and method by which they hold cans B and C firmly in place. They are fastened to top M by screws, and at the bottom by three braces, I. To operate, fill can B partly with water through tube L, then screw top L on tight and fill basin with water, which, passing through tube H, forces air through tube F to top of can B, and the pressure thus obtained forces the water from can B through tube G, forming a tiny fountain. This continues until the water is all in can C,

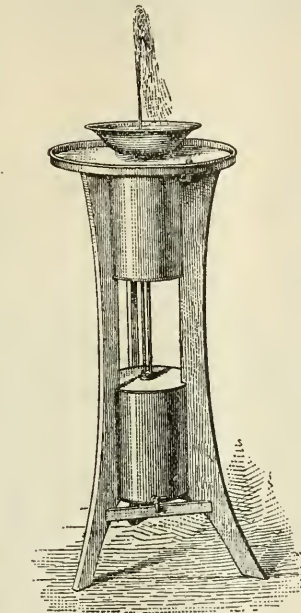
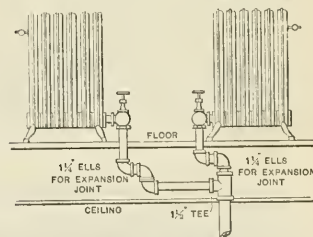


Fig. 4.—Perspective View of Fountain Shown in Previous Figure.

nized iron manufactured by a prominent maker, and with ordinary fresh water in it it seems to continue to corrode, and when water is drawn which has been in it over night small particles of oxide of zinc are seen on the surface of the water. We have some tanks in our store that have been in constant use for eight years and they do not show any signs of corrosion or rust even now. Can you explain this matter? Is there any material out of which tanks can be made that has the objectionable features of the zinc covering eliminated? Some years ago we used kalamine iron, but it seems to rust. Have you any suggestions to offer? The tanks are made in such a shape that they cannot very well be enameled. We would also call attention to another experience we had. About a year ago we were asked to make an open galvanized iron tank to be attached to a range in one of the large hotels here. Our workmen used 16-gauge, best bloom galvanized iron and galvanized the rivets and seams inside and out. Within six months the party we made it for called and said that holes had rusted in it. We



Extending a Heating System.

which we made in the heating system which was extended by the country plumber and shown in *The Metal Worker* of May 25. We made alterations in the job, as shown in the sketch, after which it worked properly.

Greenhouse Heating.

From F. M. P., New Jersey.—Will some of the practical readers of *The Metal Worker* please give me some information on heating small greenhouses with hot water? I am not seeking for the scientific frills, but information which tells simply and plainly what size pipe and how much should be used, also the kind of pipe and the size of the boiler that would be required.

thus obtained trace the curve as shown. Then the curve thus determined will represent the required section and will give the stretchout of the envelope. On the line R P, produced sufficiently outside of the side view for the purpose, lay off the stretchout of one-half of this curve, as shown, and from the points thus established draw measuring lines parallel to D F. Then, with the T square placed parallel to P R, or, what is the same, at right angles to D F, and brought successively against the points in the profile of the can body

Annual Exhibition at the Pratt Institute.

The doors of the Pratt Institute, Ryerson street near DeKalb avenue, Brooklyn, were opened to a throng of interested visitors on Thursday and Friday afternoons and evenings and Saturday afternoon, May 23-25, giving an opportunity to examine the work of the pupils in the different departments. The buildings of the institute are in the form of a hollow square, covering fully half a block, some of the buildings being six stories high and with a light and well ventilated basement. The

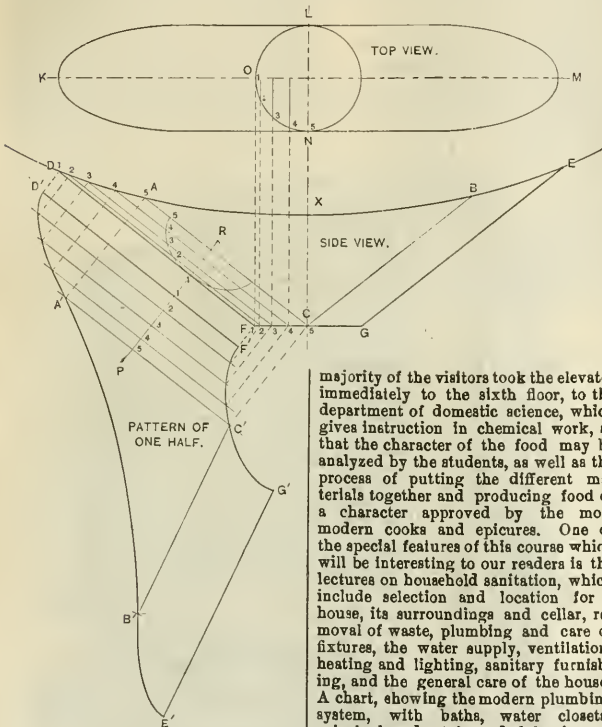
cupola and melting the iron to making the cores and preparing both bench and floor molds for the castings, then pouring the castings. The work shown, which was made by the students, was of a highly creditable character.

The plumbing shop is equipped for 50 pupils, and instructors Todd and Heath have sent many well qualified young plumbers to the various shops in the vicinity. In connection with the carpentry branch, a full and complete course in architectural drawing is given; so that a young architect, in addition to being qualified for building a pair of stairs and framing a many gabled roof, is instructed in perspective and the other requirements of architectural designing which will enable him to plan a building that will harmonize with the surroundings in which it is erected.

In the manual training school some elemental instruction is given in sheet metal work, and the array of coffee pots, miniature dish pans, tin cups, tin elbows, dripping pans and tin pails testify to the expertness of the pupils. In the department of sheet metal pattern cutting, which was instituted last year, an exhibition is made of some articles the patterns for which show that the pupils have thoroughly mastered the art of developing the surface of irregularly shaped objects. It was noticeable that a large proportion of the visitors have been women, some young, and by their enthusiasm they show that they are graduates of the school and that they are as eager to have visitors examine the mechanical departments of the school as they were the departments devoted to household science. The different shops were in charge of young men who have had instruction in them, as the questions asked by their guests could only have been answered by those who had mastered the course of the department.

A feature of the Industrial Exposition which will be held in the city of Berlin next year is a separate pavilion, covering about 1200 square yards of ground, which will be especially attractive to those who are interested in the study of modern city improvements. Here will be shown the details of the management of educational, hospital and benevolent institutions. An exhibit will also be made of sewerage, gas and water systems, as well as of bridges, markets and public baths. These will be illustrated by models and drawings, as well as by original objects so far as possible.

Plans and specifications for the erection of buildings in New York City since the beginning of the year indicate a marked revival of activity in the building industries, also a largely increased investment of capital in improvements to real estate. The number of plans and specifications filed in the Building Department in the first quarter of 1893 was 655; in the first quarter of 1894, 538, while in the first quarter of the present year the number filed was 1107, or only 86 less than the total for the same period in the two previous years. The cost of buildings proposed to be erected in the first quarter of 1893 was \$14,897,638; in the first quarter of 1894 it was \$9,418,930, making a total for the two quarters of \$24,298,568. Contrasted with these figures the cost of the buildings proposed to be erected in the first quarter of 1895 was \$27,462,514, or over \$3,000,000 more than the aggregate of the first quarters of 1893 and 1894.



Pattern for a Can Boss to Fit Around a Faucet.

between D and A, cut the measuring lines of corresponding numbers. In like manner bring the T-square against the points in the top of the article shown from F to C, and cut the measuring lines of corresponding numbers. Then lines traced through the points thus obtained, as shown by D' A' and F' C', will be one-half of the pattern of one of the ends. As that portion of the boss lying between points A, B and C is simply a flat triangular piece it is only necessary to add a duplicate of its shape to that part of the pattern just obtained, bringing one of its straight sides against the line 5, all as shown. To the other straight side C' B' must be added a duplicate of the first part of the pattern reversed, as shown by B' C' G' E'; the resulting shape will then constitute the pattern of one-half the boss.

majority of the visitors took the elevator immediately to the sixth floor, to the department of domestic science, which gives instruction in chemical work, so that the character of the food may be analyzed by the students, as well as the process of putting the different materials together and producing food of a character approved by the most modern cooks and epicures. One of the special features of this course which will be interesting to our readers is the lectures on household sanitation, which include selection and location for a house, its surroundings and cellar, removal of waste, plumbing and care of fixtures, the water supply, ventilation, heating and lighting, sanitary furnishing, and the general care of the house. A chart, showing the modern plumbing system, with baths, water closets, urinals, laundry tubs and sinks, is used in connection with the lectures, so that the young women have a comprehensive idea of what is required in a correct plumbing system.

Drawing, painting in both water colors and oil, sculpture and designing are taught in different departments. In the manual training school department a physical laboratory occupies a large space in the building. Here chemistry as applied to the various arts is acquired by the pupils. In the mechanical drafting rooms steam engineering, strength of materials and mathematics pertaining to mechanical engineering are taught. The electrical laboratory is specially well equipped, and the different branches of electrical work are taught in the simplest forms from the first principles. In connection with these departments there is a well equipped machine shop, foundry, blacksmith shop, carpenter shop and plumbing shop, so that the student in taking a course receives instruction in all these different branches. Students become familiar with the operation of a lathe, milling machine and the different tools of a machine shop, and afterward go through the foundry, from charging the

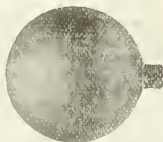
STEAM AND HOT WATER.

The Steam Fitters' Convention.

The outlook for a large attendance at the convention of the Master Steam and Hot Water Fitters' Association of the United States at Philadelphia next week is brightened every day by additions to the membership. Recently applications from isolated steam fitters have been more than plentiful, and the delegates who report that they will be present from some of the old local associations are several times the number that have been sent to former conventions. The energy of those in the management of the association has aroused an interest which will show in nearly three times the membership at the next convention that were in good standing at the last convention. The report of the Executive Committee will be a résumé of the work of the past year. The secretary's report will treat largely of statistics which reflect greatly to the credit of the association. The president's address, in addition to alluding to the information contained in these reports, will make some recommendations as to the future course of the association. It is probable that the Executive Committee will have a conference with the Executive Committee of the National Association of Master Plumbers at their session in Philadelphia next Monday afternoon.

The Hercules Seamless Copper Ball Float.

The illustration herewith shows the Hercules seamless copper ball float, which is manufactured by the Union Brass & Metal Mfg. Company, St. Paul, Minn. By a patented process they are enabled to produce hollow copper ware without seams, and of a quality that is said to be superior to hard rolled copper, being perfectly even and homo-



The Hercules Seamless Copper Ball Float.

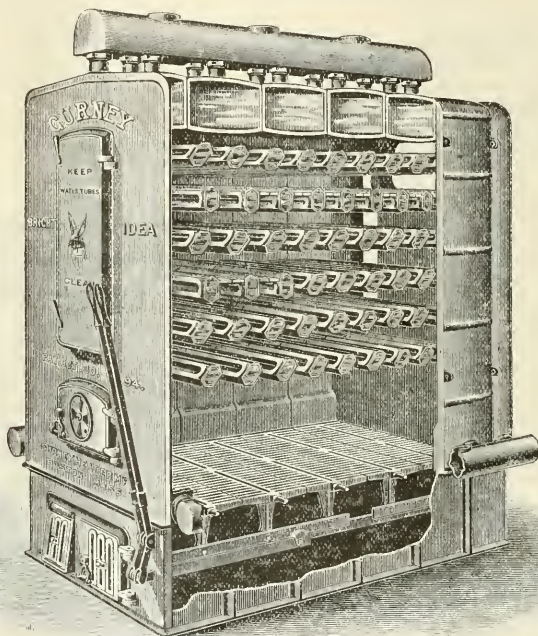
geneous throughout, without flaws, and absolutely impervious to water. These floats are made to stand a very high working pressure, from 200 to 1000 pounds to the square inch, and each one, it is claimed, is thoroughly tested before leaving the factory. The company agree to replace any of their floats which either fill or collapse under a pressure of 300 pounds to the square

inch for a period of one year from the day of shipment. They are said to be specially adapted to the requirements of all builders and users of hydraulic machinery for use in connection with steam traps, receivers and other steam and hydraulic devices.

The Gurney Bright Idea Water Tube Heater.

The trade will be interested in the accompanying broken view of the Bright Idea water tube heater just brought out

poses of cleaning, while the surface being directly above the fire the movement of the heat products, it is stated, is so rapid when the dampers are opened that the surfaces are almost if not quite self cleaning. It is pointed out that by the use of a series of webs cast upon each side of the heating surface deflecting flues have been formed, one near the top of the boiler at the back and another at the front near the center. These plates keep the fire from pursuing a direct line from the grate to the exit flue, so that the products of combustion are brought into direct contact with a



The Gurney Bright Idea Water Tube Heater.—Broken View, Showing Internal Construction.

by the Gurney Heater Mfg. Company, 163 Franklin street, Boston, Mass. As shown, it is a square fire box boiler and presents a large surface in transverse waterways. The joints are made by means of screwed nipples, outside of the fire lines, while the front and back sections are made in single cored castings and the center section made in halves nipped to the drums. This arrangement is particularly alluded to, as it enables repairs to be readily made without disturbing any part of the boiler except that which it is necessary to move. The grate supplied with the heater is of the finger bar rocking and dumping type, which permits any grate bar to be removed and replaced through the fire door. The fire box is large and the surface above it may be reached from either the front or rear for pur-

large number of water tube surfaces, more or less staggered, until the gases reach the last series but one, where they are compelled to pass to the front of the boiler into the flue mentioned, and thence along parallel lines between other water surfaces until they finally reach the smoke pipe. The object of the manufacturers was to provide a simple, efficient and economical boiler without return flues, and at the same time furnish the apparatus at a reasonable cost. Almost any kind of fuel of a good quality can, it is claimed, be used in these boilers, which are convertible and can be employed for either steam or hot water heating. The Gurney Heater Mfg. Company have published new catalogues which fully illustrate this new line of boiler, which will be sent on applica-

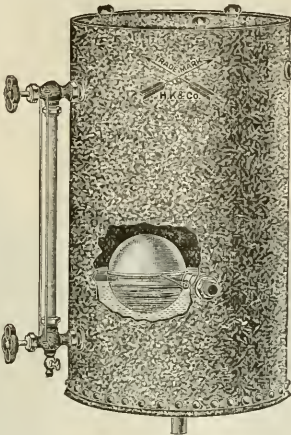
"Light, Heat and Power for 23 Cents a Day."

A visit to B. H. Hilliar, New London, Conn., will show that a portion of his store back of the office bears a resemblance to a machine shop, while the front shows a well kept line of stoves and ranges and house furnishing articles. Inquiry as to the use of the power plant and its connections discovered the fact, tersely put, that they represent "light, heat and power for 23 cents a day." An upright boiler is conveniently located and connected with a small engine. By running the boiler at a little higher pressure than would be needed for heating the store and shop, power is secured for running a lathe and a Jarecki pipe threading and cutting machine and for running a grindstone, an emery wheel and a mill in the shop. When none of these tools is in use the engine is connected with an electric dynamo, generating electricity, which is stored in a storage battery and used for lighting the store and shop in the evening. A sufficient quantity of soft coal to run the apparatus for one day costs but 23 cents; and when the engine is in use exhaust steam is employed for heating. The apparatus is kept in good order and runs noiselessly, so that it is an attraction rather than a disadvantage in the showroom. The showroom is 17 x 90 feet. With the assistance of the heat thrown off by the boiler, a radiator, exposing 120 square feet of surface, located in the office, provides all the heat that has been found necessary in the showroom. In the workshop radiator coils are arranged under the work benches and heat it satisfactorily. These coils contain 130 square feet of heating surface. The steam pipes running to the radiator in the store and to the coils in the shop are both $1\frac{1}{4}$ inch, the return pipes being slightly smaller. A line of shafting runs along the ceiling of the store and workshop, with pulleys attached for running the belts to the different tools. This apparatus has been in use two winters, and has not ex-

A. B. Franklin and J. A. Ingalls, trustees, and C. F. Whittemore, J. C. Hunnemann and A. B. Sanborn, Investigating Committee.

Anti-Waste Expansion Tank.

The illustration herewith shows a new expansion tank recently put on the market by Hepe, Koven & Co., 18



Anti-Waste Expansion Tank.

Spruce street, New York, which they call the Anti-Waste. The tank is made of refined iron, galvanized, and has a ball cock attachment and removable cover. The ball cock is placed in the tank so as to close when the tank is one-third full of water, allowing two-thirds of the capacity of the tank for the expansion of the water in the heating system when it becomes heated. An overflow is placed in the tank near the top. The cover is made so that it

HEATING NOTES.

Those who have not already arranged for space for exhibits at the conventions next week should make their application to Wm. H. Doyle, 221 South Sixteenth street, Philadelphia, who has charge of the allotment of space.

ARTICLES OF INCORPORATION have been filed by the Webster City Hot Water Heating Company, Webster City, Ia., with \$50,000 capital, of which \$21,000 must be paid up. The directors are: L. S. Bunker, president; James Shepard, manager. The business is manufacturing hot water heating apparatus.

THE EUREKA HEATING & VENTILATING COMPANY, Saginaw, Mich., have leased the Union block on Tilden street, and are fitting it up in connection with their office and showroom in the Bancroft block.

BROOMELL, SCHMIDT & Co., York, Pa., announce that they will be represented at the conventions to be held in Philadelphia next week, and hope to be able to meet their many friends for the purpose of explaining to them the details of their new Sun steam heating boilers. H. H. Lindemuth, who is well known in the trade, will be at the Continental Hotel during the full term of the conventions.

ONE of the neatest advertising souvenirs that have come to our notice is a card issued by the Carlon Furnace Company of Utica, N. Y. It is of heavy pasteboard, with serrated edge, and at the side is a little thermometer with a special cardboard backing, fastened to the main card. The advertising matter is the simple mention by name of hot water and steam boilers and combination heaters and hot air furnaces, together with a broken view of the Carlon water boiler, while below are a couple of brief references to a test conducted by William J. Baldwin, which showed that the evaporation was 11.2 pounds per pound of combustible and the added statement by Mr. Baldwin that the



"Light, Heat and Power for 23 Cents a Day."

ceeded "23 cents a day for light, heat and power." With Mr. Hilliar's permission, we have made this sketch and description of the plant, which will doubtless be interesting to many of our readers.

THE SIXTH ANNUAL MEETING of the Massachusetts Steam & Hot Water Association was held at the American House, Boston, last week. P. H. Kendrick presided. The following officers were elected: P. H. Kendrick, president; John F. Bjerkel, vice president; F. W. Foster, secretary; A. H. Kenrick, treasurer; A. C. Walworth,

can be removed, being fastened by means of thumb screw clamps which catch under a ring riveted to the shell on the inside of the tank near the top. The ball cock used is capable of standing a pressure, it is claimed, as high as 300 pounds. This tank insures the system of piping and radiators being kept full of water, for as soon as the ball cock falls water will flow in from the supply pipe. Thus the water line in the system is always kept at a safe level without attention. The tank is made in 11 different sizes, varying from 12 x 22 inches to 27 x 60 inches, and with capacity of 10 gallons to 150 gallons.

boiler was shown to utilize all of the available heat of the fuel. The souvenir, if we may so call it, is a particularly neat one, and, entirely apart from the worth of the goods it celebrates, its intrinsic value is sufficient to insure its preservation.

BROOMELL, SCHMIDT & Co., LIMITED, York, Pa., are issuing a catalogue entitled "Our Own Radiator Valves." The front and back cover and the first inside cover contain an exact reprint of the labels used on the boxes in which they are packed. These show a steam and hot water radiator valve and a radiator union elbow. The valves have

Jenkins disks for steam, quick action gates for water, and Broomell's improved studded wheels. The cover is printed in red and black, and the text is printed in red and black on blue paper, showily setting forth the features of the valves. A complete price-list is also given.

THOMAS W. RUSSELL, 2449 North Twenty eighth street, Philadelphia, Pa., has invented an incubator for which he claims special advantages. Before putting it on the market he wishes to hear from manufacturers of small hot water heaters and expansion tank, the heaters to use coal oil lamps,

in such a position that their proper relations to each other are readily seen. It also shows the grate and fire pot sections and the arrangement of the indirect smoke passage in the upper section. The last page shows an engraving of the check draft which is used on the rear of this heater.

LOCKWOOD & ADAMS have just completed the arrangement of their new quarters at 143 Centre street, New York. The walls and ceiling have been painted pure white and the front portion of the room has been covered with linoleum, while that portion which is devoted to the display of radiators is

boiler in aluminum bronze and gilt, and several styles of radiators differently ornamented. At his shop at the present time he is making two notable coils of pipe. One is made from extra heavy $2\frac{1}{2}$ inch pipe, using 130 feet in a coil that is 23 inches in diameter and stands 9 feet high. The other is made from 4 inch pipe, and is a circle 30 feet in diameter.

THE ARMSTRONG MFG. COMPANY, 139 Centre street, New York, are placing on all their new pipe cutting and threading machines an automatic attachment for feeding the pipe cutter. This device is so arranged that after the



Fig. 1.—Outside View of Portable Hot Water Heater.

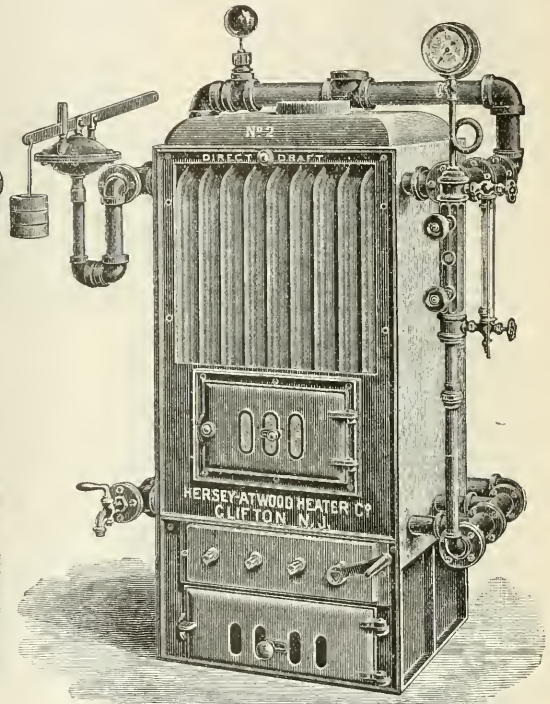


Fig. 2.—Portable Steam Boiler with Front Plate Removed.

THE HERSEY HEATING BOILERS.

gasoline burners or gas jets. He also wants prices on iron pipes, valves, &c.

JAS. T. MURRAY, Hartford, Conn., has leased the heating department of the Bosworth Heating and Supply Company, and the latter company will now devote their entire attention to the jobbing of heating and plumbing supplies. Mr. Murray has just taken the contract for the heating of Mrs. Hastings' new house with a Boynton hot water heater.

THE H. B. SMITH COMPANY of Westfield, Mass., and 133-137 Centre street, New York, are issuing a four-page circular of their Cottage hot water heater. On the front page a very pretty half-tone engraving is shown of the Cottage heater. On the second page the rating and dimensions are given. The third page shows the different sections of the heater suspended one above the other

covered with a rich crimson carpet. Here are arranged the various styles and sizes of both the Exeter and Napoleon radiators for steam and hot water. The radiators are handsomely decorated with different colors of bronze and enamel, some in plain colors and some having the relief portions decorated with bronze of different shades, making a very pretty effect.

RICHARD D. JACKSON, JR., 89 Centre street, New York, has recently been rearranging his sample room, erecting a platform on which is arranged samples of the hot water and steam boiler which he handles freshly painted and decorated with gilt bands.

GEORGE FRANKLIN, 142 Centre street, New York, has caught the Centre street spirit of decorative radiator and boiler display, and in front of his building is showing a Mahony steam and hot water

pipe is cut off it will automatically throw off the stop, should the machine be left without attention, and thus prevent breakage. They are also preparing for the market a new bench machine for cutting pipe up to 3 inches in diameter and a new power machine for cutting 8-inch pipe.

D. R. MCCALLUM has left the office at 69 Centre street, New York, in charge of George W. Plastow while he is making a visit to the office of the J. H. McLain Company, Canton, Ohio. He will return in time to meet the steam fitters at the Philadelphia convention.

PRESIDENT W. A. M. GRIER of the Corry Radiator Company, Corry, Pa., is located in a new office at 101 Beekman street, and is prepared to talk Corry radiation, inviting the heating trade to call on him. He has recently received

orders for three carloads of radiators from Francis Bros. & Jellett, the heating engineers and contractors of 1914 Arch street, Philadelphia.

THE NIAGARA RADIATOR COMPANY, 89 Centre street, New York, have recently shipped to the order of the Wells & Newton Company their new indirect radiators for use in the \$60,000 residence which is being erected by Dr. Warner.

F. D. JOHNSON, formerly superintendent for Russel Wheeler & Son, Uica, N. Y., has connected himself with the Hersey-Atwood Heater Company of Clifton, N. J., and will look after their interests in steam and hot water heating.

THE AMERICAN BOILER COMPANY, 94 Centre street, New York, and 84 Lake street, Chicago, have just brought out three catalogues. One refers to

THE GENERAL HEATING COMPANY have been incorporated at Philadelphia, for manufacturing heaters and heating appliances, with a capital stock of \$50,000. The directors are James Brown, Henry G. Morris and Pedro G. Salvin.

The Hersey Heating Boilers.

The accompanying illustrations show a new type of steam and hot water boiler for hard or soft coal, invented and patented by George H. Hersey and manufactured by the Hersey-Atwood Heater Company, whose office and works are located at Clifton, N. J., the company having just been incorporated, with a paid up capital stock of \$50,000. Among the several improvements which the manufacturers claim for the invention is the fact that the sections are connected together by R. & L. nipples, making an iron to iron joint. The

square feet of direct steam radiation and from 450 square feet to 6500 square feet direct hot water radiation. The three smallest sizes are made in portable form, shown in Figs. 1 and 2, incased in asbestos lined galvanized iron casings. The larger boilers are set in brick work, as in Fig. 3. Each boiler is provided with a deflecting plate, so that the products of combustion are prevented from passing directly out of the smoke pipe collar, if so desired. The circulation of water within the heater is all vertical, and the claim is made that it is the only cast iron sectional steam boiler that will hold a steady water line under all pressures. The vertical waterways allow the heated water or steam to rise into the flow headers with a minimum of friction and without being deflected through horizontal channels. The freedom of internal circulation allows of a perfect equilibrium

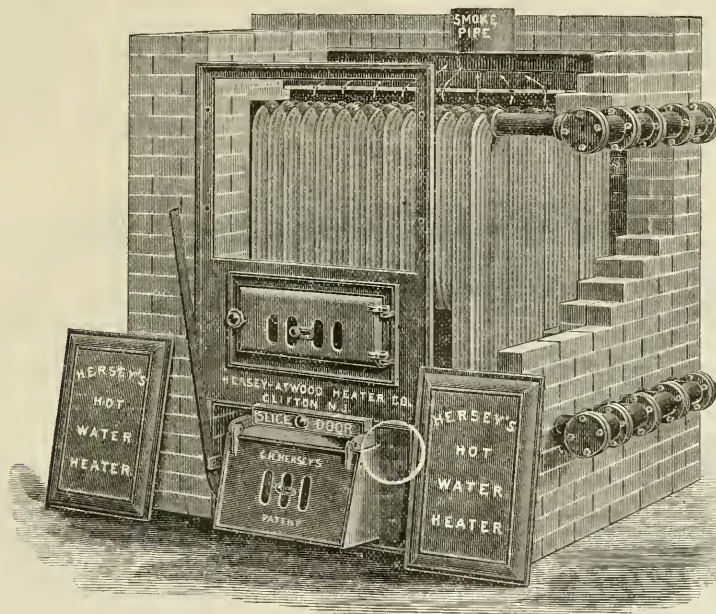


Fig. 3.—Brick Set Hot Water Heater.

the Florida steam boiler, another to the Perfect hot water heater, and the third to the Soliel safety steam boiler. The Florida catalogue treats first of the magazine top for hard coal, giving sectional illustrations to show the internal construction, also illustrations of heavy duty or double boilers, which are followed by a full description of the new Florida surface burner, for all kinds of coal, which was recently shown in these columns. The Perfect catalogue, in a similar manner, treats of the special points of the Perfect hot water heater, showing by sectional illustrations the great quantity of heating surface exposed and setting forth other special merits of the heater. The Soliel catalogue is a concise statement of the manner in which the Soliel boiler is constructed, yet all the parts are fully shown, and the inquiring steam fitter is thoroughly informed as to its special advantages. All these catalogues are attractively gotten up, well printed, handsomely illustrated and neatly bound in colored paper covers.

sections are all made up in the factory and before shipment are tested to 60-pound cold water pressure, when they are ready to be set in position on base of heater. The method of connecting the cast loops together allows of a very great amount of boiler surface being used, every particle of which, it is claimed, comes in direct action with the fire, the spaces between the loops being only sufficiently large to allow of the thorough cleaning of every part of the loops. After the sections are placed on the base the feed and return headers are quickly and thoroughly made up by the use of flanged T's, as shown in the cuts. The use of these flanged T's does away entirely with the use of the old style method of connecting by means of a nipple made up with running thread and lock nut, the use of which, the manufacturers say, means an assurance of leaking joints and labor lost. The Hersey boiler is made in 13 distinct and separate sizes, each for steam and hot water, carrying from 300 square feet to 4000

being maintained, and, it is claimed, does away entirely with the backing of water into the radiators. The boiler surface is all fire box surface, which the flame and intensely heated gases are compelled to pass over in their natural travel to the chimney. The grates used on the portable boilers are of the triangular revolving pattern, those used on the larger being a special pattern constructed by Mr. Hersey, and each boiler is fitted with a slicing door, through which the whole surface of the grate can be reached with a slicing bar, preventing the formation of clinkers. A special feature on the smaller heaters is the use of soapstone in the rear and front of fire box instead of fire brick.

The Hersey boiler is made of low height, the portable form being only 56 inches high and the brick set form 60 inches; they are, therefore, specially adapted to low cellars. The inventor of this boiler has had a great deal of experience in steam and hot water boiler construction, being the inventor of a number of the best known and most suc-

cessful boilers on the market at the present time. Catalogues and price-lists of these boilers can be obtained by sending to the Hersey-Atwood Heater Company.

THE SAMUEL JACKSON COMPANY, Pawtucket, R. I., have purchased from the assignee of the Union Steam & Gas Pipe Company, through an arrangement with their creditors, all the stock and accounts of the late company, and are now ready to take orders and give estimates for all kinds of work done by the old company. Particular attention will be paid to all kinds of house heating apparatus, and a line of furnaces and steam and hot water heaters will be carried.

Boiler Maker's Bending Rolls.

The accompanying cut illustrates improved bending rolls put on the market by Bertsch & Co., Cambridge City, Ind., and which are described as automatic opening, closing and self-adjusting. The opening of the rolls, it

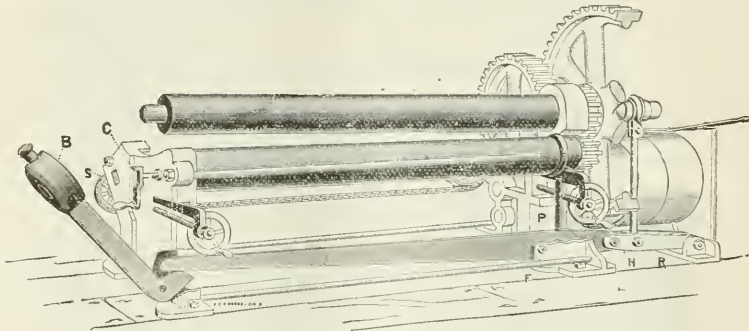
after bending a plate unless the plate to be formed is much thicker or thinner, in which case the lower roll is adjusted at both ends by wedges. The back roll, which is the main bending roll, can be quickly adjusted at either one or both ends, the adjusting screws being provided with a link belt chain attachment. The back roll is also arranged for adjusting by belt power. All the shafts, pins and screws are made of steel and have, it is said, large bearings, with extra strong pinions and gearing throughout. These rolls, which are 10 feet long, are adapted for bending plates from $\frac{1}{2}$ to $\frac{3}{4}$ inches thick.

New York's Big Schemes.

New York now has on hand three schemes of great importance and vast magnitude, which will call for the expenditure of over \$100,000,000. All are designed to facilitate traffic, one being confined wholly within the city limits, while the other two are intended for travel entering and leaving the city. One aims to relieve the crowded parts by bringing a portion of Brook-

will place it easily at the head of all kindred structures. It will serve to emphasize the remark of the late M. de Lesseps when, upon being shown some of the works in this country, he said: "The American engineers are very audacious." Incidentally the construction of this bridge will settle, probably for all time, any prospect of the completion of the Hudson River Tunnel, and in that we shall have the failure of a useful and grand conception.

The third scheme, the plans for rapid transit, is the most unsatisfactory one of all, and also the mostly costly. There is a prejudice against a tunnel as a passageway for constant daily travel. Public sentiment seems to be that it should not be adopted except where it is the only method possible. Further, engineers of experience are doubtful if the tunnel could be built without seriously damaging adjoining foundations. Again, the present plans do not provide rapid transit for a very large portion of the city north of the Harlem River. After having spent the \$55,000,000 now available, further extensions will be demanded in order to furnish the relief needed and to cover



Boiler Makers' Bending Rolls.

said, is accomplished in 5 or 10 seconds, according to the size of the machine, by simply disengaging the journal bearing buckle, which when thus removed and turned back will elevate and support the top roll and at the same time lower the opposite end of the bottom feed roll sufficiently to release a formed plate of extreme width which is to be removed. This is automatically accomplished by an attached horizontal forged steel lever beneath, which is operated by a lug or cam on the bearing buckle. This lever is also properly connected to the opposite ends of the top and bottom feed rolls, as shown in the illustration. The lower roll's adjustable bearing box at the opposite end is supported by a vertical fulcrum post, P, which rests firmly on top of the horizontal lever in the rear of the fulcrum pin F. The lower roll, it is pointed out, is therefore free to be raised or lowered at the opposite end automatically in conjunction with the top roll, so the top roll need not be elevated much to open the roll to free the formed metal the entire length, and the weight of the lower roll becomes an element in raising and supporting the top roll when opened to remove the plate. The bearing buckle being thus balanced the roll is easily opened and closed, and by a slight turn of the lock screw in the center of the buckle the machine is again ready for operation. As the lower roll is thus self adjusting it need not be readjusted each time

lyn within easy reach: another will make a common terminus in the business heart of the city by bringing all the great railroad systems now ending at Jersey City over the Hudson River; the third is expected to draw the northern sections nearer the down town region by furnishing quick and convenient lines. We refer to the proposed bridge across the East River, the Hudson River bridge and the rapid transit plans.

The first will open a large part of Brooklyn not now accessible because of inadequate and slow means of communication. If we may judge of the ultimate success of this plan by comparison with the present bridge, the relief afforded will pay a grand return upon the cost of the improvement. The bridge will reduce the congested condition of New York and be of direct financial benefit to Brooklyn by making new sections desirable.

Now having their termini on the west bank of the Hudson are the West Shore, Delaware, Lackawanna & Western, Erie, Pennsylvania, Lehigh Valley and Jersey Central railroads, all of which will be enabled to use the contemplated bridge. The delay caused by the present methods of moving freight across the river will be obliterated and several hours, on the average, will be gained thereby. Both passengers and freight will be landed in New York on time and with the greatest possible expedition. As an engineering work this bridge will stand without a rival; its magnificent dimensions and boldness of design

the entire territory it is desirable to cover. In this case the question of cost is of minor importance provided the lines constructed serve perfectly the ends in view. If we are correct in this assumption—and the Brooklyn Bridge shows the increased land values in Brooklyn—then the statement is also true that it is unwise to build a railroad under ground when it is possible to erect it above the surface.

A purchase of pig iron, remarkable on account of its purpose rather than for its extent, was recently ordered by the Board of Prison Inspectors of Lancaster County, Pennsylvania. It appears that Lancaster County has been for long a favorite resort for tramps, and this class of vagrants has been hitherto too well cared for even in jail. To put an end to the nuisance the prison keeper at Lancaster has been ordered to purchase 2 tons of pig iron, and every tramp committed for a longer period than 24 hours will be compelled to take five hours' active exercise carrying this iron from one end of the prison yard to the other. All refusing to do so will be put upon half rations.

On account of trolley competition it is announced that the Pennsylvania Railroad is about to make a general reduction in local passenger rates.

Chili has concluded a loan of \$10,000,000 with the Rothschilds.

TIN PLATES.

SCRAP.

THE MARYLAND STEEL COMPANY of Sparrow's Point, Md., are building the new tin plate plant for the Stickney Iron Company of Baltimore.

BEFORE a select committee, appointed by the British House of Commons to inquire into the question of distress and want of employment, Secretary Phillips of the Welsh Tin Plate Workers' Union gave a series of figures to show the widespread nature of the distress among the tin plate workmen of South Wales. Mr. Phillips estimated the number totally idle as 6500, while a few short of 6000 were partially idle, making a total of 12,500, against 13,000 in full work. These figures, which were compiled from the books of the union, relate principally to men, but include a few women and children.

GEORGE J. HUMBERT of Norristown, Pa., advises us that, in conjunction with New York and Pittsburgh capitalists, he is about to erect a complete four mill modern tin plate works at Connellsville, Pa.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., are proceeding rapidly on the new addition, to accommodate five new mills which they propose adding to their plant.

THE TIN MILLS of both the La Belle Iron Works, Wheeling, W. Va., and the Laughlin Iron & Nail Works, Martin's Ferry, Ohio, are expected to be put in operation next week, giving employment to several hundred men in the Wheeling district. The black sheet mills of both plants are reported to have sufficient work in hand to keep them busy for the next three months.

THE CLAYTON TIN PLATE WORKS, Pontardulais, South Wales, have been started into operation under an agreement with the workmen, who accept 12½ per cent. reduction in wages for the month of June. All the other tin plate works at Pontardulais—namely, those of the Csmbria Tin Plate Company, Tello Tin Plate Company and the Gismorgan and Hendy works of Webb, Shakespeare & Williams, are reported idle.

THE LANDORE TIN PLATE WORKS, Swansea, South Wales, which have been working very irregularly for the past four years and have been shut down for some months past, were recently restarted on the men accepting a larger reduction than 12½ per cent. in their wages. This action on the part of the Landore workmen appears to have raised a considerable amount of ill feeling among the tin plate men in other places.

"OPEN DOORS" is the title of the latest advertisement issued by N. & G. Taylor Company, tin plate manufacturers, of Philadelphia. The present circular consists of a folder, the front of which represents the doors of a factory which open in the center, displaying to view a half-tone picture of the interior of the company's tin house, showing the workmen, tinning stacks,

tin racks, dusting boxes, &c. On the face of the circular is a large red hand, the index finger of which points to the tinning stacks at the right foreground of the picture. By the side of the hand an announcement is made that in these stacks is made the Genuine Taylor Old Style brand of roofing plates. Attention is particularly called to the fact that there is no shafting, machinery or rolls, and that the work at these stacks is done entirely by hand, the same as in 1830. In this attractive little circular an invitation is given to all the friends of the firm to visit their works. The company claim that, as there are no secrets in making the best goods, so they are not afraid of the whole trade knowing by what processes their special brands are manufactured.

SOME of the heavy machinery for the new tin plate plant of the Laughlin Nail Company, at Martin's Ferry, Ohio, has been received and the work of erection will commence at an early date. The foundations for the engine and the roll trains have been completed, and the excavating for foundations for another engine and train is nearly completed. This will be one of the largest tin plate plants in the country, and the contract for its entire construction was secured by the Totten & Hogg Iron & Steel Foundry Company of Pittsburgh.

ON MONDAY, MAY 27, operations were commenced at the new tin plate plant of the Crescent Tin Plate Company, Cleveland, Ohio. The plant consists of four hot mills and four cold mills. The building containing the four hot mills is 105 x 175 feet, and the building containing the four cold mills is 105 x 168 feet, with a wing 48 x 48 feet. In the former is a 12-ton electric crane and the annealing house contains a 6 ton crane. The tinning house contains ten stacks, with pickling machines and other equipment. The black plate mills were put in operation, and as soon as a supply of black plates have been secured the other departments of the plant will be started up.

WILLIAM GRIFFIN of Pittsburgh, Pa., who was one of the first in this country to enter the tin plate business, will shortly commence the erection of a new plant at North Washington, Pa. The plant will cost \$150,000 and will employ about 300 hands.

SOME IMPROVEMENTS are about to be made to the tin plate works of the St. Louis Stamping Company, St. Louis, Mo.

THE WORKS of the Ellwood Tin Plate Company, Ellwood City, Pa., are rushed with orders and a number of new men have been recently put on.

RECENT ADVICES from San Francisco, Cal., state that imports of tin plates at that port have been large. The steamer "Ainsdale," from Liverpool, brought to hand last week 32,896 boxes, making a total importation of 199,635 boxes since January 1. The market is said to be firm and stocks only moderate. The consumption of tin plates on the Pacific Coast this year is expected to be exceptionally large. Pig tin, in

that section, has taken a considerable move upward in price, stock on hand having been encroached on considerably by the demand of canners and others and there having been no recent arrivals of the metal.

THE TIN PLATE WORKS of the Meurer Brothers Mfg. Company, 575-577 Flushing avenue, Brooklyn, are kept busy on orders for the special Meurer brands of roofing plates. The concern are now turning out an average of 2000 boxes weekly, all six tinning sets being kept in steady operation during the day. The demand for the American roofing plates manufactured by this firm is so satisfactory that they are able to keep little or no stock, the plates being shipped to fill orders as quickly as they are made. It is possible that the works may have to be put on double turn before long should the present growing demand continue. The Messrs. Meurer have lately placed in their tin house a suction fan, designed by Jacob Meurer, the head of the firm, which has been found very effective in securing proper ventilation.

ALLERTON-CLARKE COMPANY have moved their Western office in Chicago from 23 to 118 Lake street, where, among other interests, they will represent the Allerton-Clarke Mfg. Company, manufacturers of tin andterne plates at Anderson, Ind.

THE UPPER FOREST TIN PLATE WORKS of Wm. Williams & Co., Swansea, and the Clifflaw Works, Neath, South Wales, have recently started into partial operation.

A DECIDED INCREASE in the demand for palm oil for tin plate manufacturers' purposes is reported by Robert Crooks & Co., 138 Front street, New York. The firm make a specialty of supplying the trade with a high grade clarified palm oil named Fancy Lagos, which they claim gives the best results in connection with tin plate manufacture.

AT THE OFFICE of Goldsmith & Loewenberg, Temple Court Building, New York, are displayed some very excellent samples of high grade bright coke andterne plates and black steel plates now being manufactured at the new plant of the Pennsylvania Tin Plate Company, New Kensington, Pa. These specimens of American plates have been submitted to a number of tin plate experts, who have pronounced them fully equal in finish to any imported plates of their kind. The plant of the Pennsylvania Tin Plate Company has been in full and successful operation for the past two weeks with four hot and four cold mills and seven tinning sets. The company have started in with a large number of orders on their books. The officers of the concern are Philip Goldsmith, president; Berthold Goldsmith, vice-president, and J. L. Goldsmith, secretary and treasurer.

A larger number of new industrial enterprises were organized in the South last week than in any one week for years.

ROOFING AND CORNICE.

Extreme Temperatures.

BY A BLISTERED TINNER.

I read a good deal about temperatures in the steam and hot water department of *The Metal Worker*, and find quite a little about extremes of temperature; but I am disposed to think that, though I am a tinner, all are not as thoroughly acquainted with the extremes of temperature as I am. In proof of this I will attempt to give a convincing illustration to those who more frequently than the tinner talk of the extremes of temperature. I am constrained to do this by reason of the recent hot spell in May, which brings vividly to my mind an experience of May, 1881. I had done enough tin roofing previous to that time to be acquainted with the high extreme, for I have worked on tin roofs when a thermometer lying flat on the roof in the sun at midday would register 122 degrees, and when hung up on the nail keg in which we kept charcoal and cleats, the reflection of the sun would raise the temperature up to 128.

The experience of a bygone May is rather peculiar. I was out of work at the time and looking for something more remunerative and refreshing than roofing, but a friend who was in the roofing business was blessed by having all the buildings for which he had contracted to do the roofing get ready for the roof at the same time. He had all of his available force engaged and was threatened with the loss of one large contract at a profitable figure unless he put men to work the next day. I was inveigled into taking hold of this particular job with the promise that he would get me help, but as the outlook for the canning season was good every available tinner or man who had experience in helping at tinsmithing was employed in the canning houses except one darkey who agreed to work. The first day we were at work the thermometer was reported to be 97, and we gradually reduced our clothing to the requirements. The second day clothing consisted of a light shirt, a pair of overalls and a pair of heavy shoes, as the thermometer got up to 98. The morning of the third day was sultry, and although the thermometer registered but 97 at noon the heat was more oppressive, and after dinner I decided that as the building was out in the suburbs I would do without the shirt. The darkey had his African blood up and said if I could stand the sun he could and doffed his shirt too. We got all the tin on the roof that afternoon and the next morning it was necessary to go to the shop to get some tools and the coppers for finishing. On arriving at the shop at about 6:30 the good lady who took a lively interest in the institution called me to her and gave me a resounding smack on the back, asking me if it hurt. I told her that it did not, and then she invited me into the shop to see the darkey, who was lying on the bench with his back covered with cold cream, giving a polish to a series of blisters. I was

surprised to find the darkey so thoroughly used up while I was still in good condition to finish the roof, which I did alone.

Now, this represents the high temperature. The low temperature is recalled by an experience of a different character. This was another emergency case. A contractor for a row of buildings could not get one of his payments unless the heating flues were placed in position in the building, and, as a matter of course, these had to be commenced in the cellar. All of this work had been gotten ready in the shop, and I was sent to put it in place, with instructions to begin at the cellar. The weather previous to this journey had been ordinarily cold for a few days, but on the morning in question it had dropped down to zero. When I got to the cellar I found that there was about 4 feet of water in the cellar and a coating of ice over the top of it. At first I thought that this would make the job impossible, but on second thought I

Corrugated Iron Tables.

The Columbia Corrugating Mfg. Company, formerly the Chicago Steel & Iron Roofing Company, 16 and 18 West Lake street, Chicago, and Niles, Ohio, have had specially prepared for their recently issued catalogue two tables for users of corrugated iron in which the trade will be much interested. We are indebted to the courtesy of the Columbia Corrugating Mfg. Company for permission to reprint the tables with the accompanying explanations and examples:

Table No. 1 shows the number of sheets required to cover a square 10 x 10 feet, the number of square feet each sheet will lay, the number of sheets in a square, counting outside or surface measure, or counting actual laid surface, including side lap and end laps, from 0 to 6 inches inclusive, and for all lengths of sheets from 30 inches to 120 inches. All sheets lay 24 inches to centers, with one corrugation for side lap.

Table No. 1.

Length of Sheets.	Outside or surface measure.		2 and 2½, with side lap.							
	2 & 2½ inches corrugation.	1½ inches corrugation.	End lap.	End lap.	End lap.	End lap.	End lap.	End lap.	End lap.	
	26 inches wide.	25 inches wide.	None.	1 in.	1½ in.	2 in.	3 in	4½ in.	6 in	
30 inches.....	5 5⁄8	5 5⁄8	5	4 3⁄8	4 3⁄8	4 2⁄3	4 1⁄8	4 1⁄8	4	
32 inches.....	18 1⁄8	19 1⁄8	20	20 3⁄8	21 1⁄8	21 1⁄8	23 1⁄8	23 1⁄8	25	
36 inches.....	17 1⁄8	18 1⁄8	18 3⁄4	19 1⁄8	19 1⁄8	20	20 3⁄8	21 1⁄8	22 3⁄8	
48 inches.....	15 1⁄8	16 1⁄8	16 3⁄4	17 1⁄8	17 1⁄8	17 1⁄8	18 1⁄8	19 1⁄8	20	
60 inches.....	11 1⁄8	12 1⁄8	12 1⁄2	12 3⁄8	12 3⁄8	13 1⁄8	13 1⁄8	13 3⁄8	14 3⁄8	
72 inches.....	10 1⁄8	10 1⁄8	10	10 3⁄8	10 3⁄8	10 3⁄8	10 3⁄8	10 3⁄8	9 1⁄8	
84 inches.....	9 1⁄8	9 1⁄8	9	9 3⁄8	9 3⁄8	9 3⁄8	9 3⁄8	9 3⁄8	8 3⁄8	
96 inches.....	8 1⁄8	8 1⁄8	8	8 3⁄8	8 3⁄8	8 3⁄8	8 3⁄8	8 3⁄8	7 3⁄8	
108 inches.....	7 1⁄8	7 1⁄8	7	7 3⁄8	7 3⁄8	7 3⁄8	7 3⁄8	7 3⁄8	6 3⁄8	
120 inches.....	6 1⁄8	6 1⁄8	6	6 3⁄8	6 3⁄8	6 3⁄8	6 3⁄8	6 3⁄8	5 3⁄8	

found it would make an admirable scaffold. I commenced operations by the aid of this natural scaffold, and although the work was not agreeable at the low temperature, I was making fair progress when the ice broke and I went through. I do not think that I need continue any further to satisfy my friends in the steam and hot water trade that the tinner is thoroughly acquainted with high and low temperatures.

FITZ, DANA & Co., Boston, Mass., call attention to their supplies for tinsmiths, roofers, plumbers, blacksmiths, and metal workers generally, by means of small blotting pads, on the back of which is an announcement with a calendar for the month of June.

In the above table the upper figures show how many square feet there are in each sheet, and the lower figures show how many sheets there are per square. Below is an example of the application of Table No. 1.

Example.—Suppose a surface of 1242 square feet is to be covered with corrugated iron, with 84 inch iron, 3 inch end lap, and with one corrugation for side lap.

In columns opposite 84 inch and under 3 inch, take the number 13½ and divide 1242 by it; thus:

$$\begin{array}{r} 13\frac{1}{2} \overline{)1242} \\ \underline{92} \end{array}$$

therefore 92 sheets would be required.

Or take 1242 square feet and multiply by 7½, the number of sheets per

square given in same column, and divide by 100.

Rule.—Divide the square feet to be covered by the upper figures, or multiply by the lower figures, to ascertain the number of sheets required.

Table No. 2 shows the percentum increase from surface measure to surface laid. Its use is for determining the number of sheets required for any surface, including side lap of one corrugation and end laps, 0 inch to 6 inches.

metal partitions, doors and shutters, which are fully illustrated and explained.

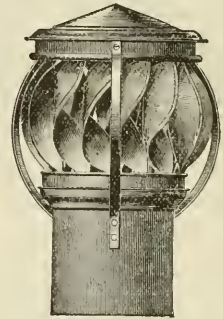
Yates' Patent Gutter Clamp.

We show in the accompanying illustration a clamp for use in soldering eave troughs that is being manufactured and put on the market by Yates Patent Clamp Company, Muskogee, Indian Territory. The use of this device is said

around chimneys, skylights and fire walls, and heating supplies.

Empire Ventilator.

The illustration herewith shows the Empire ventilator, manufactured by H. Doerge, 556 Eleventh avenue, New York. It is made of galvanized iron, being constructed to operate with very little friction and so as not to be likely to have its operation stopped by corrosion. It is said to be especially effective in connection with smoky and faulty chimneys. For use with sani-



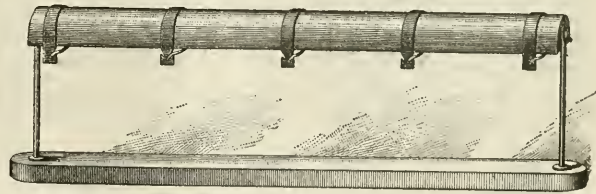
Empire Ventilator.

tary systems in connection with air vents of the soil pipes which pass through the roof it is said to have excellent advantages. Wind pressure tends to draw the air from the chimney up through the ventilator. It is designed to shed water. It is made in several different sizes, and ventilators of large dimensions can be manufactured to order.

FLASHINGS.

AMONG THE CONTRACTS recently taken by F. H. Sneath, the slate and tile roofer, of Farmington, Conn., are the following: At the Sessions Foundry Company's new plant, in Bristol, office building, 5000 feet No. 1 Brownville slate; power house and addition to foundry, 9600 feet Vermont slate; storehouse for

to economize labor very largely, and with it any person who can solder at all can make a perfect gutter equal to the work of the best. The construction of the clamp is clearly shown in the engraving, and sheet metal workers will readily understand its application and see



Yates' Patent Gutter Clamp.

how it is that so much time is saved by its employment.

"ST. LOUIS UP TO DATE" is the title of a handsome volume of 240 pages which reaches us with the compliments of the Stockhoff Heating Supplies Company, 407-409 North Twelfth street, St. Louis, Mo. The volume, as its title indicates, presents a brief history of the city of St. Louis as well as of concerns engaged in its leading industries. Among the latter is the concern above named, who handle the Bostwick steel lath, Tuttle & Bailey registers and ventilators, the American Seal builders' and roofers' elastic oil cement, designed for repairing leaks

the Atwater Mfg. Company, Plantsville, 143 x 52 feet, with No. 1 Brownville slate; storehouse for the Hartford Rubber Works, Hartford, 102 x 48 feet, sea green slate; addition to Hartford Cycle Company Works, Hartford, 50 x 12 feet, sea green slate, and a number of smaller jobs. Although Mr. Sneath is very busy his facilities are such that he is able to take care of a vast amount of work.

JAMES E. KELLEY, New Haven, Conn., has finished the roofing of the big power house of the electric railroad in South Norwalk. He also has the contract for roofing the new Nihill Block and P. & F. Corbin's big factories in New Britain.

Below is an example of the application of Table No. 2 :

Example.—Taking the same conditions as in Table No. 1, in a surface of 1242 square feet covered with corrugated iron 84 inches long, 3 inches end lap and 1 corrugation side lap, the percentum increase is 12.3%. Therefore, 1242 square feet plus 12.3% per cent, equals 1396 square feet. Divide this gross quantity by 15½, the number of square feet in each sheet, and we have:

$$\frac{15\frac{1}{2} \times 1396}{92}$$

that is, 92 sheets.

Rule.—To the net surface add the percentum increase caused by the end and side lap, and divide by the square feet in each sheet.

CATALOGUE No. 9, issued by the Kinnear & Gager Company, Columbus, Ohio, is a handsome publication, showing a line of sheet metal work. It is an oblong volume, tied together in portfolio form and having on the front cover in raised fancy gilt letters the title "Interior Decorations." These interior decorations consist of fine stamped sheet metal work in many beautiful designs. Half-tone engravings show some 22 different styles of ceilings, and then follow a number of center pieces of various ornamentation. Later on many other panels, borders, moldings, scrolls, &c., are shown in half-tone engravings illustrating the beauty of the work. The remaining illustrations in the pamphlet are likewise given up to sheet metal ceilings, beam coverings, cornices, &c. Special attention is directed to their rolling

THE RETAIL STORE.

Angle Lamp.

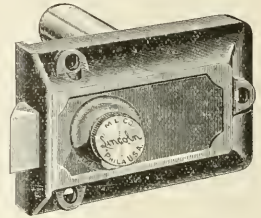
The Angle Lamp Company, 76 Park place, New York, are offering the Angle lamp as here shown. It is constructed somewhat on the principle of the student lamp, the fount supplying automatically a proper and sufficient quantity of oil, which cannot get below a certain point, insuring a flame of even brilliancy until all is exhausted. The burner is almost horizontal, the light

There are a number of styles made in tin blued, brass and nickel plated and polished brass.

The Lincoln Latch Lock.

The Miller Lock Company of Philadelphia, Pa., have lately brought out and placed on the market a new 4-inch latch lock or night latch known as the Lincoln, a general view of which is pre-

are German silver and will not rust; the keys are reversible, thus avoiding any fumbling in the dark, while a one-



The Lincoln Latch Lock.—Fig. 1.—General View of the Lock.

eighth turn of the wrist is all that is needed to open the latch. The device is also of such a size that only a $\frac{1}{4}$ -inch

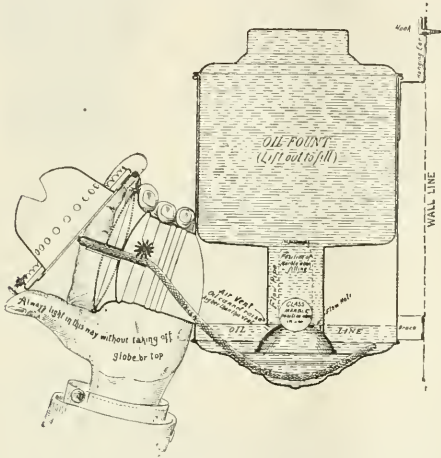


Fig. 1.—Sectional View of Angle Lamp.

casting no under [shadow]. The arrangement of the globe and burner is said to produce a steady white light, almost perfect combustion and freedom from odor. The mechanism of the burner is designed to prevent the accumulation of gases and resultant explosions. Fig. 1 illustrates the interior construction of the lamp and essee with which the wick is lighted without

sented in Fig. 1 of the cuts, while in Fig. 2 are shown the bronze metal escutcheon and key. The lock is referred to by the makers as possessing a number of points of excellence and superiority, brief mention of a few of which may prove of interest to the trade. The device has a reversible bolt of bronze metal adapted to doors which open inward as well as those

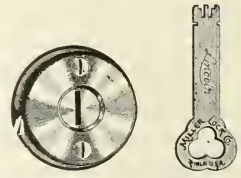


Fig. 2.—The Bronze Metal Escutcheon and Key.

hole is necessary to be cut in the door. Another point with regard to the keys

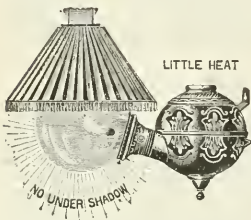


Fig. 2.—Single Burner Lamp No. 103.

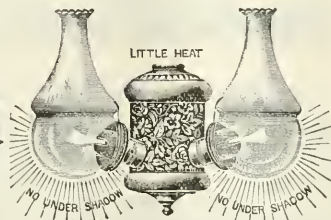


Fig. 3.—Double Burner Side Wall Lamp No. 253.

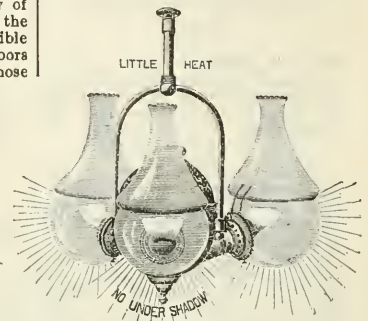


Fig. 4.—Three-Burner Swinging Frame Lamp No. 302.

removing the globe. Figs. 2, 3 and 4 illustrate several types in single, double and triple burners for side walls or suspension from the ceiling. The lamps are made regularly with as many as four burners, although any number to 12 inclusive can be put on one chandelier when specially ordered.

which open outward. The latch lock is adjustable to all doors from $\frac{1}{2}$ inch to 2 inches in thickness, while another size lock is made to fit doors from $1\frac{1}{4}$ inches to 3 inches in thickness. Each latch has for its exposure a bronze metal escutcheon, while the finish of the latch itself is strictly first class. The springs

is that they will not interchange even in large sets, unless made alike to order. The manufacturers of the Lincoln latch publish an illustrated catalogue showing some of the many goods which they manufacture, and we understand that a copy of the publication will be sent to any one applying for it.

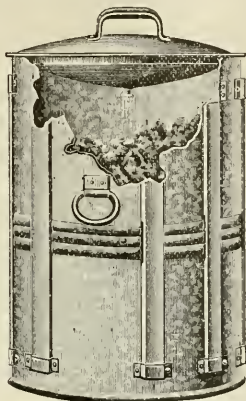
The Champion Steel Range.

The range which is made under the above name by the Champion Steel Range Company of 35 West Center street, Cleveland, Ohio, embodies a number of interesting features of construction. The accompanying engraving gives a general idea of the arrangement of the various parts, together with the course of the air currents and the products of combustion. The outside casing of the stove consists of two thicknesses of heavy cold rolled steel lined with asbestos and thoroughly riveted together. The fire box is lined with 2-inch fire brick and fitted with duplex grate. The oven is so braced that warping is said to be impossible, and all parts of it are subjected to a uniform heat, thus economizing in the use of fuel. The oven door opens down, forming a shelf which is flush with the bottom of the oven. The door is so balanced inside that it can be opened and shut with ease, while the latch is closed by a spring. The elevated closet is 17½ inches above the top surface of the range, so that a large wash boiler can be placed under it without interfering or necessitating the removing of the cover. The closet is provided with two swingselves, thus giving, it is claimed, double the usual amount of available space for warming plates or keeping cooked dishes warm. In the illustration which we present the figures 3 and 3 indicate the springs to the hot closet door, which is made of one piece, the

manufactured by Keen & Hagerty of Baltimore, Md., being in charge of this branch of their house.

Sanitary Garbage Can.

Sidney Shepard & Co., Buffalo, N. Y., are introducing the sanitary garbage can herewith shown. The can disinfects automatically from the cover, the disinfectant being poured into the cover from the bottom, and when the cover is placed on the can the disinfectant commences to drip. It is explained that any disinfectant may be used; that



Sanitary Garbage Can.

It does not spill when the cover is removed; that one filling lasts a long time, and that the disinfectant may be used at a cost of 5 cents a month or less. The can is designed to keep garbage sweet and to prevent fever germs, foul odors, sour cans, poisoned air and the spreading of disease by flies. The manufacturers state that the device sells at a small advance over the ordinary can.

Stove and Hardware Dealers of Kingston, N. Y., and Vicinity.

BY HENDRICK.

Eight miles north of Kingston, on the line of the New York, Buffalo & West Shore Railroad, lies the village of Saugerties. It is here that James Russell carries on the hardware and stove business which he bought from S. G. Searing in the year 1884, it having been established before the Civil War. Mr. Russell carries a full line of shelf ware, tin and wooden ware, agricultural implements and lamp goods, and does an extensive business in plumbing and tinning in all their branches. He makes a specialty of the Sunshine ranges and stoves made by the Reading Stove Works, and has built up a good business in them. His store is attractively arranged, the first floor being given up to hardware and agricultural implements, while the second is devoted almost exclusively to the stove business. The plumbing and tinning departments are located in a separate building at the rear.

A few doors to the left of the village square is the stove and hardware store of H. C. Hildebrand, who carries a stock of general hardware, cutlery, agricultural implements, stoves, ranges, &c. His leading lines of stoves are the

Andes, made by the Phillips & Clark Stove Company; the Aladdin, made by Burdett, Smith & Co., and the Manhattan, made by Eugene Munsell & Co. The store is so arranged that the stove department occupies one side, while the hardware, in boxes with samples exposed, occupies the entire left side. Mr. Hildebrand started in business in a small way some eight years ago, and has built up a good trade among his many friends in the village and throughout the rural districts. He recently purchased the building which he now occupies, and is assisted in the plumbing and tinning departments by his sons.

Daniel T. Lamb has been in business in Saugerties since 1867, and is one of the old settlers in the tin and hardware line. He learned his trade in a shop on Fulton street, near Broadway, New York City, at the time when Trinity Church was building. He recalls with pleasure how he used to watch the then high steeple growing higher and higher as the work of construction progressed. Mr. Lamb sells as his leading line the Red Cross stoves and ranges, made by the Rochester Co-operative Foundry Company, and does a general plumbing and tinning business. He carries a complete assortment of hardware, tinware and agricultural implements.

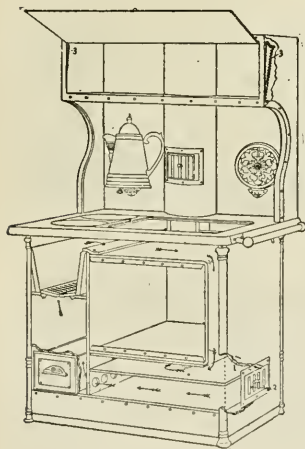
G. Deterick does a tinning and jobbing business, selling the Hudson line of stoves as well as the Cable ranges, made by E. B. Colby & Co. Mr. Deterick has been in business for several years and has built up a gratifying trade.

At Rosendale, where the manufacture of the celebrated Rosendale cement is the chief industry, Graham & Longyear carry on the business of stoves and hardware, giving attention to plumbing and tinning in all branches. The leading lines of stoves are the Andes, made by the Phillips & Clark Stove Company; the Aladdin, made by Burdett, Smith & Co., and the Glenwood, made by the Weir Stove Company. Mr. Longyear, the junior member of the firm, is a hustler, attending to the store and office, while Mr. Graham looks after the plumbing and tinning departments. The remarkable success of the firm is attributed to the combined efforts of the two members of the firm, each managing his respective part of the business with marked ability.

Daniel C. Hasbrouck, aside from his other interests, carries on the hardware business at New Paltz, which place is situated about 4 miles from the beautiful Lakes Mohonk and Minnewaska. Mr. Hasbrouck makes a specialty of the Sterling stoves and ranges, made by the Sill Stove Works, and carries a full stock of farming tools, heavy and shelf hardware, and employs several men in his plumbing and tinning shop. He enjoys a large trade among the fruit growers, fruit growing being the chief industry in the vicinity.

John Ettinge is also located at New Paltz and does a general tinning and jobbing business. He makes a specialty of the Manhattan stoves and ranges of Eugene Munsell & Co. He has been in the business for 50 years or more, and has witnessed the many changes which have taken place in the trade, one of special note being the elimination of the so-called home made tinware, this being superseded by the wares manufactured by the large stamping companies.

J. P. Caswell is engaged in the stove and hardware business at Walkkill. He makes a specialty of the Dockash stoves and ranges, made by the Scranton Stove Works; the Argand, made by the Perry



View Showing Arrangement of Parts and Course of Air Currents and Products of Combustion in the Champion Steel Range.

springs raising and holding the door in position when opened or closed. The hot air flue 2 is located below the main heating flue, and has a draft damper on the right side of the range, so that when the damper is opened the draft will draw the air through the flue to the ash pit. The manufacturers state that the air passing through this flue carries the wasted heat through the ash pit into the fire pot, forming a hot air combustion. The Champion range is also made with low down reservoir and is offered in several sizes.

S. W. MILLIGAN, 101 Beekman street, New York, is prepared to supply the trade with the varied line of tinware

Stove Company, and the Sunshlue, made by the Reading Stove Works. Mr. Caswell does considerable in tin roofing and general jobbing, his trade being principally with the farmers who come each day to the village for the purpose of bringing milk to the Borden condenser.

Eddyville is located at the terminus of the Delaware & Hudson Canal, which is 3 miles from the Hudson River. It is here that Eltinge Longyear is engaged in the stove and hardware business, making a specialty of the Dockash ranges, made by the Scranton Stove Works, and the American ventilator, manufactured by J. Van Wormer & Co. Previous to 1893 Mr. Longyear was in partnership with his brother, the firm name being Longyear Brothers. In that year, however, the senior partner withdrew on account of his extensive interests in the manufacture of an adjustable stove pipe shelf which has met with a large sale.

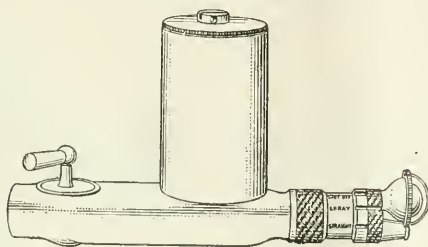
Newton Davis is also located at this place, conducting a stove and tinware business. He makes a specialty of the Argand line of stoves, ranges and heaters, manufactured by the Perry Stove Company, and has built up a good trade in them.

Fifteen miles to the south of Kingeton, beautifully situated on the bank of the Hudson River, lies the village of Highland. Here J. W. Feeter conducts the hardware, plumbing and stove business. His leading lines of stoves are the Andes of the Phillips & Clark Stove Company and the West Shore, made by the Littlefield Stove Company. He has recently constructed an addition to his store which enables him to display his goods to much better advantage than heretofore. Mr. Feeter has charge of the village water works, and this, in connection with his plumbing and tin business, enables him to employ a number of men.

William Beckett has been in business at this place for many years selling the Argand line of the Perry Stove Company with gratifying results. He also gives attention to tin roofing and general jobbing and in these lines has a good trade.

Gilmour Atomizer.

American Ball Nozzle Company, 837-847 Broadway, New York, have brought out the Gilmour atomizer, as



The Gilmour Atomizer.

here shown. It is constructed specifically for charging with insecticides and chemicals to be used for a variety of purposes with water or steam. The atomizer is 10 inches long including the removable nozzle. The lower part is 3½ inches wide and 1 inch deep, tapering abruptly at both ends for coupling purposes.

The cylinder is 4½ x 2½ inches and is screwed on to the horizontal body, there being a perforated metal plate at the bottom of the cylinder to sustain powders, crystals, &c., and to allow of a free circulation of water or steam continuously through the mass. Soap in cake form or similar materials can be placed in the main channel for washing windows or fronts of houses, rinsing off at once with a clear stream of water by a turn of the plug, which instantly directs the current through a by pass.

While the atomizer is neither bulky nor heavy, if found undesirable to hold in the hand it can be attached to the source of supply, the hose coupled on and the removable ball nozzle, which combines direct stream, ball spray and shut off in itself, fastened to the delivery point.

The plug operated by the lever at the left of the cut in itself causes a number of combinations, including a direct stream of pure water, or causes the flow to pass through the various ingredients placed in the main portion or cylinder.

The cylinder can be loaded with pastes, emulsions, oils, soaps or soap powders, crystals and chemicals or insecticides, as desired, for destroying insects on flowers, shrubs, vines, trees, &c., and for disinfecting and killing vermin and germs of disease wherever they can be attacked with a stream of water. This is especially feasible in stables, barns, outhouses, coops, kennels, &c., or by connecting with steam hose it can be used for the fumigation of holds of vessels, cellars, &c.

This device is said to insure a uniform solution, especially where Paris green is used, which settles rapidly when mixed in tanks and barrels. The atomizer and nozzle are cast brass nickelled.

Eureka Self Measuring Oil Tank.

J. R. West, Gas City, Ind., has brought out a new self measuring oil tank, on which a patent was secured by him during the past month. The tank is herewith illustrated. Its operation is simple. The oil is pumped into a reservoir above the tank, which holds 5 gallons. A gauge in the reservoir, worked by a float, indicates the exact amount of oil inside, from 1 pint to 5 gallons. The oil is then transferred to

amount is being drawn. The tank is made of the best galvanized iron, and each is thoroughly tested before leaving the factory. The pump of the floor tank is detachable, so that it may be used to pump the oil from the barrel to the tank. Floor tanks are made to hold 60, 110 and 165 gallons. A cellar tank is



Eureka Self Measuring Oil Tank.

also made on the same principle, the tank being placed in the cellar and the receiving reservoir in the salesroom, requiring a floor space of only 16 inches for the pump, reservoir and drip. The oil can be taken from the barrel and discharged directly into the tank through the drip pipe, avoiding the leakage or spilling of any oil on the floor of the salesroom. Cellar tanks are built to hold from two to five barrels. With this device no measures whatever are needed.

MEMORANDA.

THE PARTNERSHIP existing under the firm name of L. & P. Bargelt, Hanover, Pa., has been dissolved, the business being continued under the name of Louis Bargelt.

CURRIER & BRADSHAW is the name of a firm who have succeeded to the stove and hardware business hitherto carried on by H. J. Bradshaw, Paris, Tenn.

THE FIRM of Holton & Wells, stove and hardware dealers, Kirkland, Ark., have been dissolved and their business will in future be conducted by J. A. Wells, under his own name.

W. C. FOSTER, Little Rock, Ark., has purchased the hardware and stove business of the Foster Hardware Company of that place.

LUKE & BARNES, 208 South Third street, Grand Forks, N. Dak., issue a very handsome publication relating to the furnaces which they handle, and also give a list of those who have used their furnaces and letters from prominent persons speaking highly of their goods. Luke & Barnes likewise deal in hardware, tinware, trimmings, building papers, paints, ranges, &c. The catalogue is of oblong shape, bound in water line parchment, which gives a novel and handsome effect. The printing on the cover is done in red and green ink, and the whole pamphlet is an excellent example of fine press work.

PLUMBING and GAS FITTING.

Plumbing Regulations Beneficial.

In the Board of Health report of Manchester, N. H., there are the following forcible remarks dealing with the plumbing question:

The plumbing regulations have been in force since May 1. Their framing and adoption by the board took much time. While they were being considered the Board met a delegation or committee from the journeymen plumbers and the master plumbers in a body. At each of these meetings the regulations were considered one by one and thoroughly discussed. The science of sanitary plumbing is comparatively new, but there are old principles of ventilation and traps which time and experience have proved to be correct. The board endeavored to embrace in its rules only such things as seemed absolutely necessary, and rejected much that was brought to its notice with an idea of making a dollar for somebody. Any suggestion which was necessary for the safety of the public was adopted. With these ideas in view a set of regulations was produced which was published by and met the approval of some of the best sanitary papers in the country. They have worked to the satisfaction of all parties concerned who care to be honest and workmanlike in their dealings. Circumstances and conditions, unforeseen, when the rules were adopted, have arisen and it will be necessary to make some slight changes, but we believe the city is to be congratulated on having so plain, businesslike and safe a set of regulations. Their need has been amply proved since their adoption. At least 50 per cent. of the lines of main pipe have shown leaks when submitted to the water test, and the plumbers have been obliged to make the joints tight in the presence of the inspector. If work which was put together with the understanding it must stand test fails to do so, what can be expected of that which has been thrown together with a knowledge that it never would be tested? There is no doubt that much of the work done before the plumbing regulations were adopted is faulty in the extreme. Men may be honest but careless. Some are dishonest as well as careless, and when either of these conditions occur, or when cheapness has been the only end sought by the landlord, the result must be deplorable to the tenant or occupant of a building so plumbed. Some old blocks have been examined by this board and measures taken toward the improvement of the plumbing. We are in hopes in time to remedy the careless or criminal work which was put in before the rules were adopted. The board would advise that in all buildings being erected, whether on sewered streets or not, provisions be made for the plumbing which must in time be put in, as it is much cheaper and better to have such arrangements made when the house is erected, and often prevents much costly tearing out and rebuilding.

CHARLES THATCHER, after a sickness of nearly a year, died at his home, 36 Walnut street, Waterbury, Conn.,

last week. The deceased was born in Stockport, England, and was 60 years old. He resided in Waterbury 32 years. Shortly after his arrival in Waterbury he was employed by E. R. Lampson, of whom he learned his trade. Later he engaged in the plumbing business himself, combined with the sheet metal trade, and then dealing in stoves and hardware. His first business associate was William H. Clark, who was succeeded in the firm by Robert Dixon. Mr. Thatcher continued the business alone until 1890, when the Chas. Thatcher Company were formed, with the following officers: Charles Thatcher, president; C. G. Belfit, vice-president and manager, and H. L. Slanson, secretary and treasurer. Mr. Thatcher was also at the head of the firm of Charles Thatcher & Co., but on account of his sickness was compelled to retire.

Exposed Plumbing.

BY SAMUEL REINS.

The leakage of water pipes behind decorated walls and fine ceilings is a sufficient argument against incasing or covering service pipes. The repairs are generally costly, and entail the additional services of the carpenter and decorator. Pipes in casings or placed in walls or partitions as they pass from floor to floor provide especially inviting runways for rats, mice and vermin of all kinds. Nests are built in these places, and pieces of paper, rags and food are carried into them so that they eventually become filthy. The casings or wall pockets, as the case may be, act as ventilating shafts, and distribute the odors from the kitchen and cellar to other parts of the building. In the performance of this work they are faithful and impartial. The hollow walls and floors which are universal in the American system of construction greatly assist in this work.

If any accident occurs in an exposed system, the point at which the break takes place can be reached at once and repairs easily made. The quality of the exposed plumbing work gains pride in putting up work that is creditable to his workmanship when it is to be on continual exhibition. Exposed pipes may be passed through floors without having a large opening; and the space around the pipes can be made perfectly tight so that the passage of odors is cut off completely. This is a great gain, and the runways for rats, mice and vermin are entirely done away with. These pests can then be exterminated. This is practically impossible in houses where casings protect them and afford perfect breeding places. Cut off these free passages to all parts of the house and they prefer more congenial quarters, where rapid transit is provided and fields for colonization are unlimited.

The appearance of the cast iron pipes may be often made to harmonize with the decorative features of the room. The body of the pipe shows very well when covered with a very dark bluish gray scarcely removed from black. Bands of silver bronze around the hubs and other points on the pipe relieve the monotony; or the whole pipe can be finished in two or three shades of

bronze. Lead and wrought iron pipe may receive a similar treatment. If galvanized iron pipe is used and it is clean and bright in appearance, a coat of varnish is all that is needed. Lead pipe never looks handsomer than when carefully polished and varnished, so as to preserve its brightness. There is no difficulty when a little ingenuity is used in making the decoration of the exposed pipes quite effective.

Justice to the Plumber.

For more than a year the daily press of New York City have accepted the report which intimates that favoritism has ruled the Board of Plumbing Examiners of the city. During this time influence from various quarters has been brought to bear upon this board in the interests of different parties; but the law was of such character that the duties of the board were plain. It is to their credit that they have adhered closely to the law. Recently, during the trial of a plumber who had violated the law, the justice before whom the case was tried stated that the act under which he was arraigned was a bad law and that he would impose the lightest possible fine. He further asserted, "I know of one man who has been a master plumber for twenty-five years, and yet cannot join the Master Plumbers' Association because he will not pay the \$300 registration fees." The attention of John Mitchell, president of the National Association of Master Plumbers, who is at the present time president of the Master Plumbers' Association of New York, was called to this statement, and he states positively that the justice is wrongly informed. There is not now, and never has been, any disposition to prevent any licensed master plumber from joining the Master Plumbers' Association of New York who is willing to abide by its rules. These rules seem to be vindicated from the fact that the association has a membership of nearly 400, and that among these men are the most prominent and respected master plumbers of the city. The entrance fee to this association is nominal and the dues reasonable. The only condition under which a plumber would be amenable to the association for any such sum as \$300 would be as a result of a fine for infringing upon its laid down laws. For carelessness and failure to acquaint themselves with the laws of the association, fines of \$25 and \$50 have been frequently inflicted upon offending members; and in some cases, where the offending member has persisted in pursuing a course contrary to the laws of the association, fines of \$100 and \$250 have been paid, an acknowledgment of the correctness of the policy of the association and of the wrongdoing of offending members. In some cases the members have seen fit to withdraw or submit to the expulsion laws of the association rather than pay the fines; and under these conditions, until the fine is paid, such plumbers would be debarred from the association. Plumbers' licenses have been granted to all competent plumbers, whether members of the association or not, and whether having a large plumbing establishment or only a cellar of the residence of the plumber. A careful investigation will show that any applicant who conforms with the pro-

visions of the law and possesses the necessary intelligence to pass the examination prepared by the board will have no difficulty in receiving a certificate which enables him to take out his license after filing his bond in the proper city department.

Convention Gossip.

No DETAILS regarding the programme have been given officially, but it is learned that the convention will be opened on Tuesday morning with an address of welcome by Mayor Warwick. President John Mitchell will make a suitable response, after which the business proper of the convention will commence. In the afternoon the visiting ladies will be taken in barouches for a drive through Fairmount Park by the members of the Ladies' Reception Committee. The steamer "Chauncey Vibbard" has been chartered, and on one afternoon will make a trip down to Cramp's shipyard, and afterward to Lincoln Park, on the Delaware, where, after enjoying the attractions of the place, the visitors will be entertained at dinner at the hotel. On Friday, after the close of the convention, the visitors will be taken on a special train to Atlantic City, ten-day return tickets being presented to each delegate.

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THE PHILADELPHIA MASTER PLUMBERS are busy completing their arrangements for the entertainment of the visiting delegates. Their programme is expected to be ready for distribution this morning (Saturday). Its contents have not yet been made known to the public, but that it will be a substantial entertainment there can be no doubt.

* * *

THE Philadelphia Master Plumbers' Association Committee on Arrangements consists of the following members: Wm. McCoach, chairman; Wm. S. Clark, secretary and treasurer; Sam'l W. Barnes, Geo. W. Beckett, A. G. Bond, Frank P. Brown, S. Louis Barnes, Wm. Calboun, John E. Eyanson, Wm. H. Doyle, S. B. Fleming, John Furlow, John Gornily, Wm. Harkness, Jr., A. M. Hicks, Walter Jones, Arthur B. Lange, Wm. W. Mentzinger, Wm. L. Owens, Chas. L. Parmelee, J. V. Reagan, W. R. Ross, G. Wallace Smith, Geo. F. Uber, L. N. Yearsley.

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THE WALNUT STREET THEATER is a large and commodious theatre, and will prove comfortable, no matter what weather may be experienced. It is probable that electric fans will be put in for the occasion, which will be a further assurance of comfort.

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THE LADIES' RECEPTION COMMITTEE of the Philadelphia Master Plumbers comprises the following ladies: Mrs. Wm. McCoach, Mrs. W. S. Clark, Mrs. S. W. Barnes, Mrs. Geo. W. Beckett, Mrs. A. G. Bond, Mrs. G. C. Bond, Miss Hattie Bond, Mrs. F. P. Brown, Mrs. S. L. Barnes, Mrs. J. E. Eyanson, Miss Bessie Eyanson, Miss Evaline Clark, Mrs. Wm. J. Carroll, Mrs. J. P. Crombarger, Mrs. C. P. Donnelly, Mrs. W. H. Doyle, Miss Blanche Feaster, Mrs. S. B. Fleming, Mrs. M. Furlow, Miss Jeannette V. Harkness, Mrs. Wm. H. Hallman, Mrs. A. M. Hicks, Miss Ella Hicks, Miss Clara Hicks, Mrs. W. Jones, Mrs. M. P. Kingeater, Mrs. A. B. Lange, Mrs. C. Mealy, Mrs. W. W. Mentzinger.

ger, Mrs. Thos. McCarthy, Mr. David McCoach, Mrs. W. L. Owens, Mrs. W. I. Raymond, Mrs. J. V. Reagan, Mrs. E. Remick, Mrs. W. R. Ross, Mrs. G. W. Smith, Mrs. M. Starr, Mrs. G. E. Uber, Mrs. L. N. Yearsley, Mrs. E. Smith Williams.

* * *

DELEGATES who are preparing jokes on the "slowness" of the Quaker City should be careful to get them off early, as after the reception which will be accorded the visitors and the entertainment which will be provided such jokes will fall rather flat. The Philadelphia plumbers, no doubt, will be prepared to listen once more to all the jokes on their city which have appeared in the comic and other papers for the last few years and to appear amused, but to a Philadelphian "chestnuts" of this kind are nauseating and are tolerated only on account of the submissive spirit which prevails in the City of Brotherly Love.

TRAPS AND VENTS.

W. A. FAUST of Pittston, Pa., has bought out the plumbing shop of Wm. Gilchrist of Wilkes-Barre; J. T. Johns of Wilkes-Barre, Pa., will take charge of the shop at Pittston.

C. S. EAMES, the well-known Bridgeport, Conn., plumber, has been elected a member of the Building Commission of that city, and will assume the duties of his position July 10.

THE VANDERMAN PLUMBING & HEATING COMPANY, Willimantic, Conn., are issuing a 20-page catalogue of the plumbing and heating specialties invented by Wm. Vanderman, a half-tone engraving of whom is shown on the front cover. The first few pages show the different styles of steel tool chests for pipe fitters and plumbers. This is followed by the recently patented hot water expansion tank, lead and iron pipe cutters, lead pipe benders and asbestos lead joint runners for soil pipe, water closet connections, bench pipe vises, which can also be used as mechanics' vises, provided with a combination for bending pipe; hinged and solid frame pipe vises, radiator trucks and radiator union valve, elbow connections and pipe holders for joint wiping. The last page is devoted to Vanderman's Plumbers' Estimate List Book, made in two sizes, for office and for pocket use.

YOUNGSTROM & WELSH, Phoenix, Arizona, are justly proud of a fine piece of plumbing which they have completed in the residence of Dr. J. N. Ford, who has made something of a study of modern plumbing. The bathroom has a porcelain lined, rolled rim bath, handsome lavatory and a noiseless water closet. All the wood and finishing in the bathroom is of polished cherry. The basin and bath cocks, traps and fixtures are all nickel-plated, and are connected with the service and waste pipes by means of lead pipe and brass ferrules. One of the special features of the bathroom is an instantaneous water heater, using gas for a fuel. This is said to be the first high grade plumbing system that has been installed in their city, heretofore fixtures of a commoner grade having been used.

McGRATH & GOODRICH have succeeded to the plumbing business of Thomas McGrath at Memphis, Tenn.

THOMAS ROBERTS, Main street, Toms River, N. J., having added plumbing, steam and hot water heating to his stove and hardware business, will be glad to receive catalogues and prices from the trade.

FRANK W. HUBBARD, son of W. B. Hubbard, manager of Peck Bros. & Co.'s Boston store, 65 Oliver street, has recently taken a vacation trip to New York and the factory at New Haven.

J. E. ZIMMERMAN, representing Ideal Mfg. Company, Detroit, Michigan, recently renewed his acquaintance with the Boston trade.

THE McVEY & WALKER FOUNDRY & CAR COMPANY of Braddock, Pa., have almost completed a large extension to their big plant on Ninth street and Halket avenue, Braddock, for the manufacture of bathtubs. All kinds of enameled tubs and linings and fixtures will be made.

A MASTER PLUMBERS' ASSOCIATION affiliated with the National Association of Master Plumbers was organized at Easton, Pa., last week. The meeting was held at the rooms of John Mack and was attended by representatives of 14 plumbing firms in Easton and South Easton, Pa., and Phillipsburg, N. J. The following were elected officers: President, John Mack; vice-president, William C. Kelly; secretary, John Beam; treasurer, John Thume.

J. C. SHANNON & SON of Penn Yan, N. Y., have purchased the plumbing business of Amsbury & Brown.

The following master plumbers have duly passed an examination which fits them to do plumbing in Cohoes, N. Y.: John Clark, R. H. Mott, W. J. English, Robert Campbell, James Bathgate, A. G. Burbanks, Bartholomew Cooney, John Maguire, John B. Golden, H. Lancaster, David Clark, William Loop, Wm. J. Barrett, Charles Vandercook, inspector. The members of the plumbing board, H. E. Bottum and Elias V. Cady, are also eligible to do plumbing.

A NEW industry will be started at Holly, Mich., under the style of the Holly Bath Tub Company. E. M. Day of Detroit is interested.

ALL of the plumbers in Ann Arbor, Mich., have taken out a license permitting them to take contracts for house connection with the sewer. The employees have also taken out certificates of competency.

J. BREWSTER and WILLIAM LEAHY, two well-known journeymen plumbers in Decatur, Ill., have decided to go into business for themselves at the corner of North Park and Franklin streets, and will be prepared to do plumbing, steam and gas fitting.

J. A. CURTIS and J. J. BENNER have purchased from L. B. Curtis the heating, tinning and plumbing branch of his business at Red Hook, N. Y., and will continue the business under the firm name of Curtis & Benner.

GEO. MAHL, Hartford, Conn., has a lively young plumber in his employ, the 100 yards dash, open to apprentice plumbers at the journeymen plumbers' picnic, for a set of tools, having been won by Barney Fitzsimmons.

At the annual meeting of the Florida State Association of Master Plumbers, which was held in Jacksonville last week, the following officers were elected for the ensuing year: William Clarke of Jacksonville, president; J. W. Roberts of Tampa, first vice-president; E. M. Greeson of Tampa, second vice-president; John Einig of Jacksonville, secretary; J. E. Kuchler of Jacksonville, treasurer; L. C. Yaeger of Tallahassee, sergeant-at-arms; delegates to national convention to be held in Philadelphia on June 11, John Einig and J. W. Roberts.

At an adjourned meeting of the plumbing board of Yonkers, N. Y., an

application for certificate of competency was received from F. W. Sutton, No. 31 Twelfth avenue, Mount Vernon, and certificates of competency were granted to James Moen of No. 4 Vineyard avenue, and Andrew B. Bare, No. 72 Buena Vista avenue.

ROSENHEIM, LINCK & ITTNER, St. Louis architects, are, we are advised, now specifying Star Couplers made by the Star Coupler Company of St. Louis, instead of ground joints. One of the principal reasons given for specifying the Star Couplers is that it lessens the number of joints used at least one-half, for they explain that in a job where ground joints are used it is necessary to make a wiped joint, and this, together with the ground joint, makes two joints necessary to complete the work, whereas in using the Star Coupler only one joint is necessary and absolutely no joint wiping is required. Another feature is the cheapness of Star Couplers, which have recently been reduced in price on account of increased facilities for their manufacture.

THE E. S. WHEELER COMPANY, New Haven, Conn., have moved their New York office to Room 307, Beekman Building, 101 Beekman street, and are prepared to quote prices on tin plate and plumbers' supplies. B. & H. H. Summer, dealers in plumbers' specialties, share the office with them.

A. D. EVERTSEN, 639 East 138th street, New York, adorns his letter-head with an engraving of "a pushing plumber." It represents a workman with wheelbarrow laden with a water closet, a pump, a laundry tub and some traps and fittings, on his way to do a job.

THE PENNSYLVANIA RANGE BOILER COMPANY has been incorporated at Philadelphia, with a capital stock of \$75,000; the directors are Edmund L. Leoy, William H. Marsh, John P. Harlan, Lawrence B. Leoy, G. Eugene Harlan, Philadelphia.

HENRY STEIN has taken an office at Room 209 in the Beekman Building, 101 Beekman street, New York. He makes a specialty of brass goods for steam, water and gas, and has a line of sanitary specialties. Mr. Stein carries a stock of these goods and is prepared to fill orders promptly. He will also look after the interests of the Star Coupler, made by the Star Coupler Company, St. Louis, Mo., in the Eastern States.

B. FRANK HOOPER, president of the Colwell Lead Company, is back again at his desk at 63 Centre street, New York. Mr. Hooper was accorded a royal reception by his friends on his arrival on the steamer "Umbria" last Saturday evening, after a two months' holiday tour in Europe, in the course of which he covered a large amount of ground and visited a number of interesting scenes both on the Continent and in England. He returns greatly benefited in health and in vigor from his well-earned holiday.

BAILETT & HORMAN are a new plumbing firm at 191 Clinton avenue, Newark, N. J.

MCVAY & WALKER, car builders, founders and machinists, Braddock, Pa., have made some additions and alterations to their plant, with a view to engaging in the manufacture of enameled bathtubs, sinks and other similar goods. The firm will give employment to a considerably larger force of men as soon as the new departments have been put in operation.

AMONG the plumbing establishments recently started in Chicago can be mentioned the following: John Kenny,

946 Ashland avenue; H. R. World & Co., 4148 Cottage Grove avenue; A. McNeil, 2453 Wabash avenue; Willis Carpenter, 2428 St. Charles avenue; Thomas Coleman, 2097 West Lake street; John L. Fruin, 5031 State street; M. E. Breen, 156 Blue Island avenue; Frank Murphy, 3457 Dearborn street.

THE PLUMBING ESTABLISHMENT of Thomas E. Weber, 234 Penn street, Reading, Pa., was visited by fire last week.

THE PLUMBING FIRM of Trotter & Buck, Altoona, Pa., have been dissolved. The business will be carried on hereafter by L. Trotter at the old stand, 1714 Eleventh avenue.

LAWRENCE RICKETTS died last week at Pittsburgh, Pa., aged 87 years. Mr. Ricketts was a native of Ireland and came to Pittsburgh in 1843, and for a number of years was foreman in a local mill. He was the father of James J. Ricketts, the Oakland plumber, and Lawrence Ricketts, who is in the plumbing business on Ross street. Besides his sons his wife and two daughters survive him.

ROBERT STANLEY, Bar Harbor, Maine, is about to move into his new plumbing shop.

W. I. NORTON & Co. have rented the store room recently vacated by Ingwersen & Wilhelmson on Second street, Port Clinton, Ohio, and will shortly open a plumbing shop.

P. J. WHELAN, formerly foreman for the Stifel O'Neil H. C. Company, St. Louis, Mo., plumbers, has left that concern and opened up for himself with Robt. Jacobs, Jr., as partner, at 107 North Eleventh street, between Pine and Chestnut streets, where they will do business in the plumbing and gas fitting line.

THE LAWRENCE-LETTES ELBOW COMPANY, LIMITED, Waverly, N. Y., have completed an extension to their present plant for the manufacture of the O. H. one-piece stove pipe and conductor elbows. The addition to the works is a three story and basement building 50 x 115 feet and is newly equipped with machinery and tools to meet the requirements of a largely increased demand for their product.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 21 for the work, including the sheathing and completion of the roofs and skylight of the United States Court-House, Custom House and Post Office Building at Omaha, Neb. Drawings and specifications may be had from the Supervising Architect, Washington, or of the Superintendent at Omaha.

The report of British Consul-General Sharpe, at Zomba, on the growth of the trade of British Central Africa during last year, indicates a considerable expansion in the total imports and exports of that region as compared with those of 1893. The increase in imports is chiefly seen in cotton goods, provisions and hardware. Exports of coffee have nearly doubled, and this industry is receiving a great deal of attention, coffee planting promising to be the leading business of British Central Africa in the future. Mr. Sharpe mentions a very serious increase in exports of ivory, which is every year becoming scarcer and more difficult to obtain on account of the gradual extermination of the African elephant.

Tinned Plate Manufacturers' Association.

The annual meeting of the Tinned Plate Manufacturers' Association of the United States was held in the Conestoga Building, Pittsburgh, Pa., on Wednesday, June 5, W. C. Crone-meyer in the chair and John Jarrett secretary. The annual election of officers was held and resulted as follows: W. T. Graham of the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, president; Warner Arms of the Falcon Iron & Tin Plate Company, Niles, Ohio, vice-president, and John Jarrett, secretary and treasurer. An Executive Committee was also elected, consisting of Alfred Marshall, C. R. Britton, D. M. Somers, W. B. Leeds, William Banfield, T. K. Niedringhaus, W. C. Cronemeyer, George Greer and A. W. Brown. The attendance at the meeting was large, 27 concerns being represented. An informal discussion of the wage question was had and a Conference Committee appointed consisting of W. T. Graham, Warner Arms, W. B. Leeds, George Greer, A. W. Brown, C. M. Stuart and J. B. Strawbridge. As soon as notified by the Amalgamated Association that the scale is ready a conference will be held between this committee and a similar committee from the above organization. The statement made in a number of Pittsburgh papers, and attributed to Secretary Jarrett, to the effect that the manufacturers would ask this year a reduction in the scale of from 12½ to 15 per cent., is untrue. Mr. Jarrett has not expressed himself on the wage question and will not do so until the scale now under preparation by the Amalgamated Association is made known. A conference is expected to be held within the next two weeks.

While conducting a series of tests with a 100-ton testing machine at the Yorkshire College, in England, which included the testing of a steel wire rope, Professor Goodman stated that such ropes were not a modern invention, and that he had recently seen a bronze wire rope, ½ inch in diameter and from 20 to 30 feet long, which had been found buried in the ruins of Pompeii and which must have been at least 1900 years old.

Buffalo, N. Y., journals state that buildings are now in course of erection in that city that will cost over \$11,000,000. One of these, the Elliott Square Building, is to contain 600 offices, besides stores, *cafés*, &c.

The International Exposition, to open in the City of Mexico on April 2 of next year, will be located within ten minutes' ride of the center of the city, on an area of 700 acres surrounding the Castle of Chapultepec, the residence of the President of the Republic. The exposition grounds will be divided into three large courts, named respectively the Grand Court, the Mexican National Court and the Foreign Court. Among the special attractions will be a scenic railway, a captive balloon, an Indian village and a Mexican mining camp.

STOVE TRADE NOTES.

Western Freight Rates on Stoves.

The Western stove trade is again brought face to face with a threatened advance in railroad freight rates. It will be remembered that the Joint Western Classification Committee, representing all the railroads in the territory east of the Rocky Mountains, decided last fall to advance the stove classification from third to second class, to take effect on January 1. Manufacturers and merchants strongly opposed the change at that time, on the ground that the stove trade was not in condition to warrant the imposition of higher freight rates. The business was still feeling the severity of the depression, and it was believed that the contemplated advance would have an injurious effect on the limited demand. The trade needed encouragement, and not repressive measures. A hearing was granted to representative stove men, who presented such convincing arguments to the committee that the change was not made. It was, however, not completely disposed of, as the committee decided to lay the matter over for six months. This makes the proposed change go into effect July 1, unless corrective action is again taken. An organized effort will be made by the trade to suspend or revoke the action of the committee.

The change in classification will make an average advance of about 30 per cent. in existing freight rates, which is quite a serious addition to the cost of stoves to the country merchant. It is true that business has recently shown some improvement, but it is not yet of a character to warrant such a sharp advance in freights as the proposed change in classification would bring about. The volume is still far below the level of ordinary times, and it is believed that the interests of the railroad companies lie in the direction of securing more traffic rather than in asking higher rates on what they are now carrying. Every stove manufacturer is tenderly cultivating the least appearance of an improvement in the demand from his customers, and is especially careful not to check a tendency to reviving trade by too quickly advancing prices. The same policy should actuate railroad managers, who are in a position to assist or retard the improvement. Merchants can assist the manufacturers in opposing the change. They should protest against it with all the vigor of which they are capable, and if their protests pile up in managers' offices they cannot fail to receive respectful consideration.

Taplin, Rice & Co.

Akron, Ohio, have issued a very neat catalogue and price-list of stoves and ranges which they manufacture in many varieties. The little volume bears date of May 1 and consists of 86 pages, printed in blue-black ink upon a good quality of paper and bound in terra cotta covers with an embossed side title. The manufacturers state that at the earnest request of their friends, and in order to meet the growing demands of the trade, they have brought out a line of steel ranges, offered under the name Steel Climax. The range is made of cold rolled malleable steel plate with tight joints, dust proof oven, the bottoms being securely braced with bars of iron bolted with countersunk head bolts at intervals of 3 inches, thus guarding against warping or buckling. The covers, centers, top rims and top sections and fire box linings, grates, &c., are extra heavy and made of best quality iron. The fire box, which is oval in shape and fitted with a duplex grate, rests upon a perforated frame in such a way as to give complete ventilation, thereby protecting the linings and preventing them from burning out. An extension fire box capable of receiving 26-inch wood is furnished when required, and can be readily attached by simply taking out the back end jamb. The flues and end of the fire box are asbestos lined, while the bottom of the oven flue is lined with fire proof cement. The water front is of malleable iron, tested to 180 pounds pressure, and so constructed as to form the front end of the fire box. The body, closets and shelves of the Steel Climax are enameled with japan, giving a high polish and durable finish. The Steel Climax is shown in the catalogue in several varieties, and is adapted for burning hard or soft coal, coke or wood. Attention is also invited to the Steel Climax laundry stove for coal, coke or wood, having a capacity for 75 sad irons or 70 tray polishing irons at one time. Laundry stove No. 14 has a capacity for 32 irons at one time, or when the top is used for boiling purposes 10 irons can be heated around the sides. The Air Tight Climax is a handsomely decorated parlor heater made in three sizes for soft coal, and is offered as a novelty for the season of 1895. It embodies the latest improvements and the manufacturers are confident that it will prove popular with the trade. The Round Climax for coal or wood is an oak stove which has been improved for this season. The catalogue concludes with an illustration of the World's Best furnace, made by May & Fieberger, and of which Taplin, Rice & Co. are also manufacturers and selling agents.

SCHILL BROTHERS of Crestline, Ohio, have just issued from the press an exceedingly attractive pamphlet illustrating and describing their line of steel ranges, for the manufacture of which they have a well equipped plant. The pamphlet is printed upon tinted paper and bound in white covers of unique texture. The pages are stitched through the back and tied with a silken cord of a delicate shade of pink, while the side title consists of the words "Schill's Steel Ranges," printed in old

gold. The goods illustrated and described are offered in a variety of styles and sizes and embody features to which reference was made in the review of the advance copy of the catalogue a few weeks ago.

A New Trade-Mark.

A new trade-mark has recently been adopted by Southard, Robertson & Co., with foundries at Peekskill, N. Y., and office and warehouses at 257-259 Water street and 21-27 Peck slip, New York City. An idea of the design of this trade-mark may be gained from an inspection of the accompanying illustration. It will be observed that the design is appropriate to the generic name under which the company manufacture a varied assortment of stoves, ranges and heaters. The word "Magnetic" at once suggests the compass



A New Trade-Mark.

which forms the central feature of the design. The compass is framed, as it were, in a steering wheel, around the rim of which appears the word "Magnetic," and the name and address of the company. Immediately above the compass are the words, "Stoves, Ranges and Heaters," while below is the inscription "Warranted True as the Magnet."

ODD PLATES.

D. S. RICHARDSON of the Richardson & Boynton Company, New York, has been granted a patent for a hot air furnace construction which supplies air at high temperature at the surface of the fire, for the purpose of consuming the gases that are thrown off at the surface of the fire. It is claimed that by supplying this air at a temperature of approximately 800 degrees an immediate intermixture with the products of combustion is gained, causing their prompt ignition and consumption.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., have in process of preparation two handsome publications, one of which will constitute a regular stove catalogue, and the other a special volume devoted to the company's hot water and warm air heating apparatus. The publications are to be first class in every particular, and the company ex-

pect them to be the finest ever placed before the stove and furnace trade by a manufacturer. They will show the recent additions which the company have made to their varied assortment and call attention to the leading features which have been incorporated. In the stove and range line will be shown new and original productions, including a complete series of air tight heaters of handsome finish and varied as regards styles and sizes; an entirely new hard coal base burner, first class in all respects; two entirely new lines of wood parlor stoves made in both direct draft and base heated patterns; an entirely new production in an exclusively wood burning cook stove made in a variety of styles and sizes and finished in strictly high grade class; two separate and distinct lines of wood cooks of new design and ornamentation; two new wood burning ranges embracing the popular styles and sizes in four and six hole tops; a new high grade six-hole coal and wood range; two new and original productions in medium priced coal and wood ranges, comprising all popular styles and sizes with four and six hole tops; a new low priced coal range of original design and construction made in the usual styles and sizes with six-hole top; an original production in the way of a low priced coal and wood cook and coal and wood burning four-hole range. In the furnace department the catalogue will show a large and complete line of goods adapted to meet the varying requirements of the trade. This company have devoted no little time to making their warm air and hot water combination heaters complete in every particular, and have made additions to their wood burning furnaces and combined wood and coal burning heaters which cannot fail to be appreciated by wide awake, enterprising dealers, and especially those handling the Peninsular lines.

AN English hardware journal reports that the production of oil stoves at the foundries of Birmingham and the Black Country has been prodigious during the past season, one firm in that district having turned out an average of 1500 each week.

THE GRATE MANUFACTURERS' ASSOCIATION of Western Pennsylvania and Eastern Ohio has just been formed, composed of James McCullough, Jr., of Kittanning, Pa.; Knott, Harker & Co. of Beaver Falls, Pa.; W. L. Sharp & Son, Steubenville, Ohio, and the George L. Conn Foundry Company, also of Steubenville, Ohio. The circular which has been issued in regard to the matter states that owing to the recent and prospective advance in cost of manufacture, and in view of the fact that goods have been sold for less than actual cost, the members of the association have agreed upon a uniform scale of prices in the future. This scale applies particularly to what are known as "grates and fronts," which the four concerns named manufacture in common for the bituminous coal region within 100 miles of Pittsburgh. The circular states that former prices are to be withdrawn and that the new prices will be low, as the members of the association have no wish to take advantage of their friends, but hope as soon as trade revives to be warranted in a further advance in order that they may realize a reasonable profit in manufacturing. The circular bears date of June 1.

THE RUTLAND FIRE CLAY COMPANY of Rutland, Vt., are making use of a novel circular to aid in the collection of their small scattered accounts. The text of the circular, which is printed in red and in short lines with display type, is as follows: "We need Money. Have heavy bills coming due. Inclosed

we hand you statement of your account with us. The amount is not very large. The small amounts all help us to pay our bills. You can pay this account any day. Why put it off any longer? The payment will help us out. Why not mail us your check to-day? We will appreciate it."

THE CENTRAL OILGAS STOVE COMPANY have recently resumed active operations at their Jackson, Mich., plant, owing to the improvement in the demand for their leading specialties. They have started the works with about 20 molders and such other help as are needed to take care of their work.

A PAMPHLET of oblong shape, issued by Kruse & Dewenter, Indianapolis, Ind., is entitled "A Treatise on the Kruse & Dewenter System of Warming and Ventilation for Buildings both Public and Private, and the Latest Improved Sanitary Dry and Flush Closets." In an introductory note they call attention to the fact that they have been engaged in the manufacture of warming and ventilating apparatus since 1866, and find it necessary to publish a new book every two or three years to keep the public informed of the improvements they have made. This latest volume begins with a general treatise on ventilation, transmission of heat, combustion of coal, air, ventilation required and principles of ventilation, this being followed by a specific explanation of the Kruse & Dewenter system. The illustrations of large size are colored and show very vividly the system of ventilation employed, the direction of air currents, the air passages, &c. The closets are similarly explained and illustrated, while later in the volume the furnaces are shown by means of various sectional and broken views. A number of different varieties of Monarch, Peerless, Perfection, Mogul, Globe, Solar and other furnaces of their manufacture are referred to. At the close of the volume are illustrations of prominent buildings, churches, public schools, &c., in which the Kruse & Dewenter systems are employed.

THE JOLIET STOVE WORKS of Joliet, Ill., issue their customary monthly calendar in the shape of an attractive blotting pad embellished with a design showing a large water lily fully opened and resting upon the surface of the water, while projecting from the center of the lily are to be seen the head and fore legs of a frog. The calendar for June occupies a little square in the upper right-hand corner of the blotter, while the remaining space refers to Moore's air tight heater, the improved 1895 design of which is said to be "a beauty."

THE CENTRAL STOVE WORKS of Lebanon, Pa., were sold on Friday afternoon, May 24, by Sheriff Stine, to William Beyerle of the place named. The sale covers the patterns, stoves, molds and, in fact, everything but the building itself. We understand that the purchaser has not made up his mind whether he will operate the works or offer them for sale.

THE BELLAIRE STOVE COMPANY of Bellaire, Ohio, are meeting with a good demand for their leading specialties, and state that business is better just now than during the same period last year.

RECENT advices from Southeastern Massachusetts are to the effect that the Century Stove Company of Dighton are running their works four days a week.

THE PHILLIPS & BUTORFF MFG. COMPANY of Nashville, Tenn., have been meeting with a very gratifying demand for their specialties, and one of the Chattanooga papers is authority for the statement that one day, not long

ago, the company received orders from Texas for 461 stoves, from California for 296, from Georgia for 176 and small orders from other States aggregating nearly 200 more.

GIBLIN & Co. of Utica, N. Y., are distributing circulars descriptive of their leading furnaces, the merits of which are fully set forth in a way to interest the dealer, while broken views give an idea of the internal construction. The circulars relate to the Standard Smokeless furnace, which is designed, it is claimed, not only to burn soft coal, but to "burn it without smoke, gas or explosion;" the Standard Junior, which is made in several sizes, with diameter of fire pot ranging from 21 to 29 inches inclusive; the Rival Junior, made in four sizes; the Standard steel furnace, which is offered in five sizes, and the Rival, made in four sizes.

THE ELLWOOD CITY GAS STOVE & STAMPING WORKS recently turned out 1768 new stoves in a week, being the largest week's work since the plant was started. A large new addition will soon be built and the working force increased.

THE RICHARDSON & MORGAN COMPANY of New York City early in the week filed articles of incorporation with the Secretary of State, the capital stock being given as \$100,000. The directors are J. J. Richardson, Ernest A. Williamson and J. A. Richardson of New York City. The company will manufacture stoves, furnaces and cooking and heating apparatus.

THE EXCELSIOR MFG. COMPANY, St. Louis, are busily engaged on their 1895 catalogue, which will be ready to be sent to the trade on or about July 15. It will contain a number of new goods, prominent among which will be their Charter Oak steel range, which is now fast nearing completion. An air-tight heater with cast top and bottom and cast door will also be shown. Circulars of this latter stove are now being sent to the trade upon application.

THE SCHUYLKILL VALLEY STOVE COMPANY, Spring City, Pa., will this season introduce a new sheet iron single and double heater in two sizes. They have remodeled several of their ranges, new bases being the principal feature in the changes.

FLOYD, WELLS & Co., Royersford, Pa., have just contracted for the erection of two wings to their main building 76 x 78 feet and 75 x 60 feet respectively. The wings, when completed, will be utilized for an extension of the molding shop, and are expected to accommodate about 35 molders. Among the new goods which the firm will put on the market this season will be a square heating stove, with nickeled corners, nickeled swing cover, foot rails and base, large ash pit, and nickeled finish bronze urn. They have redressed their Star Rosemont parlor heater, it now having a full nickeled section top and swing cover, and full nickeled base, side rails and name plate.

WE HAVE RECEIVED, with the compliments of the Phillips & Clark Stove Company, Geneva, N. Y., an advertising novelty which they are distributing among their friends in the trade. It consists of a card case made of black leather, finely finished and well made. Upon the inside of one flap of the case and printed in old gold letters is the inscription: "Compliments of Phillips & Clark Stove Company, Manufacturers of Andes Stoves and Ranges, Geneva, N. Y." The character and quality of the card case are such as to insure its preservation by the recipient, and it is excellently designed to serve the purpose for which it is issued. We

also have from the same company another novelty bearing a *fac-simile* of the company's trade-mark in old gold. It is either a pouch for tobacco or for carrying loose change, as may be preferred, evidently the latter use being the most appropriate. It is of tan-colored leather and closes with a twist which insures safety to the contents.

M. THATCHER, at his new show-rooms on Beekman street, is showing the Ellwood gasoline stoves made by the Ellwood Gas Stove & Stamping Company, Ellwood City, Pa. One of the features of the stove is the arrangement of a double burner under an oblong grating at one end of the stove, which is used in connection with an oven for baking and gives a very powerful burner for other cooking work.

THE DETROIT STOVE WORKS, Detroit and Chicago, have enjoyed an excellent run of orders for their gas ranges the past spring. This is their second season in the gas range line, and their success shows that the foundation for a good trade was well laid last year. They have had a good business in Chicago as well as in the cities and large towns generally throughout the Northwest. The range, as made for this season, is most handsomely dressed, much attention having been paid to the design adopted in molding the frame and nickel having been used freely in the decorations. The burners used are of the company's own design and have proved very satisfactory. They are drilled, with a circle of holes forming the center, from which arms radiate in star shape. The usual objection to drilled burners, namely, popping, has been completely overcome. Two sizes of ranges are made, 16 and 18 inch, with or without water heaters, high broiling ovens, high warming closets, &c. A number of new goods are now being brought out for the fall trade in standard cooking and heating apparatus.

HORTON, GILMORE, McWILLIAMS & Co., 172 to 176 Lake street, Chicago, are anticipating a large trade on Cole's air tight stove, for which they are exclusive sales agents in Indiana, Illinois and part of Michigan and Wisconsin. The manufacturers have made considerable improvements in the stove for this season. They have added a line with a nicked swing top, and have also made the entire top of cast iron, thus securing both greater durability and a much more attractive appearance. The line with cast top can now be shipped with two sizes nested together, thus effecting a saving of freight. An air tight coal stove has also been brought out, having a steel body, removable cast top and cast fire pot and grate which can be removed through the top. It is furnished with a hot blast draft, designed to assist in securing more perfect combustion. The manufacturers make very strong claims for this stove.

WILLIAM RESOR & Co., Cincinnati, Ohio, will offer a new air tight heater with some special features in its construction, and in three sizes, the coming season, and their Monitor parlor base heater for wood will be put out with a new dress. Some important changes have also been made in the outward appearance of their front sheet flue and hot blast draft Monitor base burner, which will doubtless prove of interest to the trade. The internal construction whereby the greatest portion of the heat is radiated from the front of stove instead of the rear, as is the case with the ordinary base heater, and the hot blast draft whereby perfect combustion and absolute control of the fire at all times is maintained, having given such universal satisfaction, will not be changed in any

manner. This stove is made in three sizes, and two sizes with double heating attachment. A new catalogue, illustrating and describing the company's entire line, is now in the hands of the printer and will be ready for distribution within a few weeks.

HESS, SNYDER & Co., Massillon, Ohio, will shortly place upon the market a new air-tight heater, under the name Success Broomer, for which are claimed many points of superiority, the fire pot having the same principle of construction as the fire bowl in their Broomer furnace; they also are bringing out a gas and smoke consuming device similar to the latter, of which but one size will be made this season.

THE new open Franklin, the Gem Franklin and the new Red Oak stoves recently brought out by Shinnick, Woodside & Gibbons of Zanesville, Ohio, are reported as meeting with a phenomenal demand.

THE INDIANA STOVE WORKS, Evansville, Ind., are operating their establishment on full time, and are busily engaged in getting out an entire new line of wood cooks under the name of Ideal Darling, which will embody all the latest improvements. A new catalogue is also in the printers' hands, which, it is expected, will be ready for distribution about the 20th.

WM. G. SEMPLE has severed his connection with the stove house of S. Faith & Co., and will take a position with the Philadelphia Stove & Iron Foundry Company, with whose goods he is thoroughly familiar, having previously spent several years in the latter company's employ. He reports that they have a handsome double oven range, and that the Clover Triumph range for builders' use is increasing in popularity. Their Triumph and Domestic heaters are finding favor with the builders. Robert Patton looks after the interests of this house among the building trade and is booking some satisfactory orders.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

JOHN W. DANFORTH bid \$2375 and secured the contract for heating and ventilating the West Avenue School Building at Lockport, N. Y.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 25 for a low pressure circulation steam heating and ventilating apparatus for the United States Court House, Post Office, &c., building at Charlestown, S. C. Drawings and specifications may be had from the Supervising Architect, Washington, or of the Superintendent at Charlestown.

YOUNGSTROM & WELSH of Phoenix, Ariz., announce they have received what they claim is the largest plumbing contract that has ever been let in the territory. They have the contract for the plumbing and fitting of the new Ford Building, which amounts to \$2800.

A. B. SPROUL has the contract for the plumbing in the new building of the Adamant Plaster Company, New Haven, Conn.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 20 for the steel skylight, framing, roof over mailing platform, steel vault lining, &c., for the United States Post Office Building, at Washington, D. C. Drawings and specifications may be had from the Supervising Architect or from the Superintendent at Washington.

CURTIS & BENNER, Red Hook, N. Y., have the following contracts for heating the new De Peyster Home for Consumptives, at Verbank, using two Boynton

steam boilers, and for the roofing, using Cortright's Victoria metal shingles; the tinning, plumbing and heating for a \$10,000 residence for the Misses Martins, using a Boynton hot water boiler. They also have the contract for the tinning work for the \$7000 residence of Dr. R. G. Carroll.

J. S. CRAIG, Hartford, Conn., is overhauling the plumbing in Walter Keeney's residence and C. R. Powers' house.

LANGDON & DALEY, 630 Main street, Hartford, Conn., are enjoying a very busy season. Among the many contracts of cupping their attention at the present time are: A six-tenement house on Whitman court, a two-tenement house on Kenyon street and a six-tenement house on Florence street, all for Theo. Newton; a two-tenement house for Chas. Stone; a two-tenement house for Mr. Collins; three two-tenement houses for George Clark; a two-tenement house for F. Loescher; also a hotel in Simsbury.

THE ARNOLD COMPANY, New Haven, Conn., have obtained the contract for the plumbing of F. C. Cannon's two-family houses. The plumbing will be first class, including lavatories, baths, &c. The Fossett & Bishop Company have the heating.

DONOHUE & BERTILSON, Bridgeport, Conn., have the contract for the plumbing in the new house being erected by J. Lattin.

HENRY GREELEY is to build a fine residence at Hartford, Conn. It will have a modern plumbing system and will be heated with furnaces.

JAMES F. DUFFY, Hartford, Conn., has a contract for the plumbing in a \$5000 residence for Miss Julia Langenham.

D. M. SHEEHAN, New Haven, Conn., has a contract for the plumbing and hot water heating in a new building for Adam Kidinger.

PROPOSALS are wanted until July 19 for rebuilding, heating and ventilating the High School Building, at Cleveland, Ohio.

THE BOARD of Education of Cedar Rapids, Iowa, at a recent meeting, awarded the contract for heating and ventilating a new school building to the Peck-Williamson Heating & Ventilating Company, Cincinnati, Ohio.

THE CONTRACT for the steam heating plant for the Lincoln Institute, at Jefferson City, Mo., will be awarded June 14.

FRED DAMM is putting the heating apparatus in the school building at Carmelton, Ind.

JOHN BAIN, 1609 Sixty-third street, Chicago, has the contract for the plumbing and drainage in the flat building of H. Goodman, Forty-seventh street and Armour avenue.

CLAYTON & MILLER, 477 West North avenue, Chicago, are to do the plumbing and drainage in the residence of O. H. McElden, 913 Jackson boulevard.

FRANK MEER, 485 West Eighteenth street, Chicago, has the contract for the plumbing and drainage in the flat building of Frank Kolenka, Twelfth place.

M. F. BARRETT, Chicago avenue and Paulina street, Chicago, is to do the plumbing and drainage in the flat building of B. Legen, 500 West Chicago avenue.

J. STEWART, 6506 Wentworth avenue, Chicago, has the contract for the plumbing and drainage in the flat building of H. J. Houghton, 6600 Wentworth avenue.

DAVEY & SCHUMACHER, 454 Lincoln avenue, Chicago, are to do the plumbing and drainage in the flat building of J. Biebel, 1713 Diversey street.

MORRIS BROS., 3442 South Halsted street, Chicago, have the contract for the plumbing and drainage in the residence of Edward Witschrock, 5753 Paulina street.

J. CONRATHS, 5900 Princeton avenue, Chicago, has the contract for the plumbing and drainage in the apartment building of F. P. Burket, Forty-seventh street and Burley avenue.

J. E. HEDMAN, 656 West Division street, Chicago, is to do the plumbing and drainage in the apartment building of C. J. Anderson, Davis street, near Potomac avenue.

DORE & SON, 1042 West Van Buren street, Chicago, have the contract for the plumbing

ing and drainage in the flat building of Charles Barnett, 1638 Greenshaw avenue.

W. P. BOLTE, 5117 Dearborn street, Chicago, is to do the plumbing and drainage in the flat building of E. F. Dyar, Fifty-fourth court.

WILLIAM F. JOHNS, 887 West North avenue, Chicago, has the contract for the plumbing and drainage in the flat building of M. Lundahl, 888 North Fairfield avenue.

THE CARTON FURNACE COMPANY, Utica, N. Y., have been awarded the contract for heating and ventilating the new Francis Street School Building, at Utica.

HUSSEY & EDWARDS, Revere, Mass., have the contract for heating the Town Hall.

CHRIS. ALLEN, El Dorado, Kan., is arranging the water closets in the Court House.

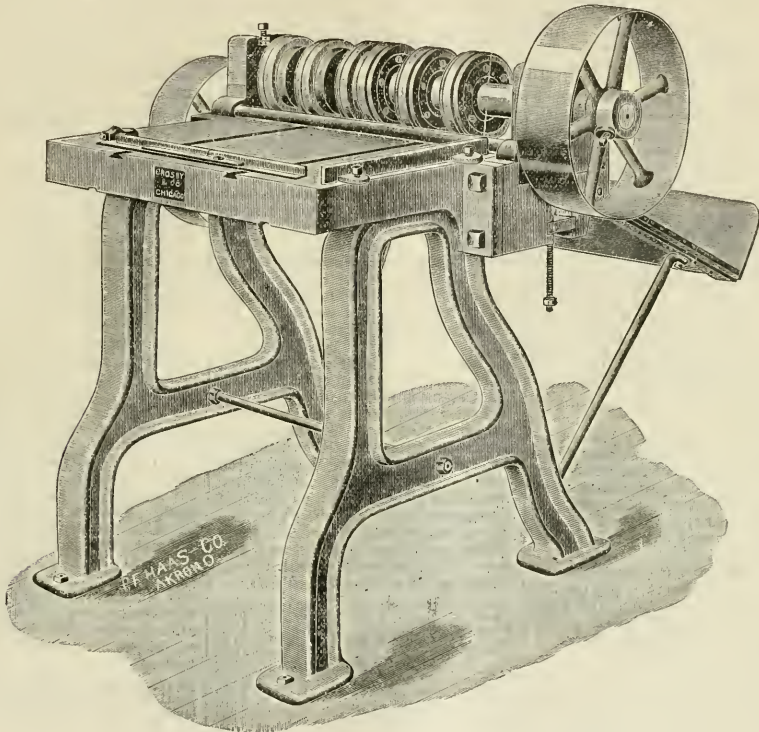
The Crosby Gang Slitting Machine.

A new machine, illustrated herewith, has been brought out by G. A. Crosby & Co., 176 South Clinton street, Chicago. It is specially designed for the use of manufacturers of cans for fruit, meats, &c., or for any one desiring to cut light sheet metal into uniform rectangular blanks. It is constructed with direct reference to rigidity and strength. The shafts are provided with hard forged boxes, accurately fitted, and are of forged steel, made unusually heavy and strong to guard against the liability of getting out of true or springing, as the slightest variation in the shafts would ruin the nice adjustment of the cutters.

balanced idler hung on springs so arranged as to straighten the sheets as they pass into the cutters. The cutters may be ground without removing them from the machine or altering their adjustment by use of the grinder, which the manufacturers furnish when desired.

The machine is provided with an adjustable bar which is not shown in the cut. This prevents the dropping and twisting of the blanks as they pass out from the cutters. The weight of the machine is about 1000 pounds. It will trim and split or slit sheets $2\frac{3}{4}$ inches wide.

A French photographer has recently been able to photograph objects under water. His apparatus consists essen-



The Crosby Gang Slitting Machine.

THE Committee on Public Property, Gloucester, Mass., have awarded the contract for furnishing heating and ventilating apparatus for the new school house at Magnolia, to L. E. Smith & Co.

THE CONTRACT for plumbing the Greeley Street School Building has been awarded to Owen McAuliffe, Providence, R. I., who will also do the plumbing in the new school building on Ruggles street. The contract for the heating apparatus has been awarded to the Worcester Steam Heating Company.

I. F. GRUMBINE of North Ninth street, Lebanon, Pa., has secured the contract to place in the new school building to be erected at Myerstown a Howard heating furnace.

Several of the London districts are contemplating the establishment of the public automatic hot water system now in use in certain parts of Paris, by which the residents can obtain a supply of hot water by the coin-in-the-slot system.

Each shaft is provided with a pulley which necessitates one cross and one open belt. This arrangement allows the adjustment of the shafts so as to bring the centers of the shafts closer together when the cutters are reduced in diameter by grinding, thereby saving the trouble of recutting or readjusting gears.

The cutters are made very broad and heavy, of the best steel. Between every two sets of cutters there is a specially prepared elastic roll which runs against a similar roll on the opposite shaft. These rolls are held in place by hubs to which are attached the cutters. This arrangement does away with the annoyance experienced heretofore from the front and back feeding rolls, which, if there is the slightest variation or irregularity in the stock causes it to twist and thus be cut out of true, spoiling the stock.

The roll in front of the cutters is a

tially of a barrel filled with oxygen, surmounted by a glass bell which holds an alcohol lamp. By means of a mechanical contrivance, powdered magnesium is thrown on the flame of the lamp, which flares whenever a view is taken. The equilibrium of the barrel is preserved by means of suitable vents in the bottom which admit water as the oxygen diminishes. Very clear and beautiful photographs taken on the very bed of the Mediterranean have, it is said, been obtained in this way.

A professor of the University of Pennsylvania, who has recently returned from a journey in the Orient, has brought with him a complete Buddhist temple and accessories, the whole weighing about 6 tons. It is to be erected in Philadelphia, and will be the only temple of Buddha in the United States.

TRADE REPORT.

The Iron Market.

Reports from all the leading centers uniformly record either actual advances or a rising tendency. In fact, the pace is getting so hot in some districts that the conservative element is growing nervous of a possible set back. A good many sellers in different branches of the trade are refusing to quote beyond next month because they prefer to await developments. This is particularly true of the rolling mills, whose product has not yet caught up with the advance in raw material.

The advance in prices has put a quietus on the embryo export trade in many lines, and for a long time to come little will be heard of the exultation of the earlier days of the year. It will echo along probably in the wise editorials of economic writers, in stump speeches and in the halls of Congress.

The only really valuable trade which we did capture, modest though it be, taken altogether, is that of Canada. We doubt whether serious sacrifices will be made to hold it for the present. When it is wanted again low prices will be the relentless method for recapturing it. In some branches like the Wire trade we are fast approaching the point again when it will pay to buy foreign Wire Rods for the export trade under drawback.

The methods of the Tack Association are now in full operation with the Wire Nail and the Cut Nail industries, and prices, particularly for the latter, have been keyed up very considerably. A spell of prosperity is a startling and possibly intoxicating change after years of abject misery.

The Southern Pig Iron makers have put up prices another 25c. per ton for the third quarter, making the total advance 75c. from the lowest point. The market has been quite active in Cincinnati and in Chicago.

Pig Iron.—The New York market has been fairly active, but it is evident that a number of buyers still have little faith in the permanence of the advance. This is due chiefly to the fact that their own business has not as yet shown much improvement. Another advance of 25 cents has been decreed by the Alabama makers. The Virginia furnaces are again getting into shape, many having been banked by the Pocahontas strike. We quote \$12.25 to \$12.50 for No. 1; \$11.25 to \$11.50 for No. 2, and \$10.75 to \$11 for No. 2 Plain, and \$10.25 to \$10.50, Northern brands, tidewater delivery. Southern Iron, same delivery, is selling at \$12 to \$12.25 for No. 1; \$11.25 to \$11.50 for No. 2; \$10.75 to \$11 for No. 3; \$11 to \$11.25 for No. 2 Soft, and \$11.25 to \$11.50 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10.50 to \$10.75.

Advices from Philadelphia indicate that the Pig Iron market retains all the strength and buoyancy noted in recent reports. Prices are not notably higher, but the average of sales are at about last week's prices, with a probability that still better figures will rule in the near future. Some furnaces

have stopped quoting, on the ground that they have sold all that they ought to sell, and until they can see more clearly in regard to the course of events during the fall months they prefer to hold themselves open to whatever may turn up. Buyers are anxious to place orders, however, and a large business is being done. Foundry grades are in heavy demand, with sales at from \$11.65 to \$11.75 for No. 2 X, although in a few cases \$11.50 is said to be quoted. The general tendency is toward higher figures, and it is believed that another revision of quotations will be necessary before long. Meanwhile fair average prices are about as follows:

Standard No. 1 Foundry X.....	\$12.00 to	\$12.50
Standard No. 2 Foundry X.....	11.50 to	11.75
No. 2 Plain.....	11.00 to	11.25

The market for local Coke Iron in Chicago is quite active, yet contracts recently placed have in very few instances called for round lots. It now looks as if prices will be higher before many days. Manufacturers are merely considering the question as to whether it will be advisable to make any material advance until they are thoroughly satisfied that no danger exists of the demand being checked. Southern Iron is higher and local Iron could easily be put up another notch. Many large consumers have not yet covered their requirements for the future, and when they come in another great element of strength will be added to the situation. A moderately good trade is reported by sellers of Southern Iron, which is limited by the scarcity of some grades. Prices have been advanced 25c. on an average to cover deliveries for the next three months, and 25c. more for deliveries beyond that time. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to	\$13.50
Local Coke Foundry, No. 1.....	10.50 to	10.75
Local Coke Foundry, No. 2.....	10.25 to	10.50
Local Coke Foundry, No. 3.....	9.75 to	10.25
Local Scotch No. 1.....	10.50 to	11.00
Ohio Strong Softeners, No. 1.....	12.75 to	13.25
Southern Silvery, No. 1.....	12.25 to	12.50
Southern Silvery, No. 2.....	11.75 to	12.00
Southern Coke, No. 2.....	10.75 to	11.00
Local Coke, No. 3.....	10.25 to	10.50
Southern, No. 1, Soft.....	10.75 to	11.00
Southern, No. 2, Soft.....	10.50 to	10.75

In the Pittsburgh district the belief in the trade that higher prices on Coke will prevail after July 1 has been strengthened by the appearance of the leading Pig Iron maker in the market as a buyer, during the past week, of Bessemer Pig for delivery in July and August. Purchases of some 50,000 tons of Bessemer are reported to have been made by the concern in question. The appearance of this concern as a buyer has done much to strengthen the market, and the fact that several Valley furnaces will go on Foundry in a short time is also having its effect. Foundry Iron is in fair demand, but has not responded in the same degree to the higher prices ruling as have Bessemer and Gray Forge. We quote as follows:

No. 1 Foundry.....	\$11.00 to	\$11.25, cash
No. 2 Foundry.....	10.50 to	10.75

The situation of Pig Iron in the Cincinnati market is one of extreme strength. Large orders have been received by both Northern and Southern furnaces and prices of all grades

have been advanced. Southern producers have instructed agents to advance prices 25c. per ton, which makes a total advance of 75c. per ton from the lowest point within the past few months. In fact, at the close the policy of both Northern and Southern furnaces is to place such prices upon various grades as to preclude further large sales. The orders already taken have been heavy. Most of the Southern furnaces now running are either unable or unwilling to increase the present capacity, and even if there was a disposition to run fuller, it is doubtful that the furnaces could be put into paying working condition under several months' time. Quotations are given as follows:

Southern Coke, No. 1.....	to	\$10.25
Southern Coke, No. 2.....	to	9.75
Southern Coke, No. 3.....	to	9.50
Southern Coke, No. 1 Soft.....	to	9.75
Southern Coke, No. 2 Soft.....	to	9.50
Ohio Soft Stone Coal, No. 1.....	14.50 to	15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to	14.50
Lake Superior Coke, No. 1.....	11.75 to	12.25
Lake Superior Coke, No. 2.....	10.75 to	11.50
Hanging Rock Charcoal, No. 1.....	to	11.00
Hanging Rock Charcoal, No. 2.....	to	10.50
Hanging Rock Charcoal, No. 3.....	to	9.50
Tennessee Charcoal, No. 1.....	13.00 to	13.50
Tennessee Charcoal, No. 2.....	12.00 to	12.50

The demand for Pig Iron in the St. Louis market is increasing and bids fair to continue, especially as consumers realize the fact that the recent advance is legitimate and will be strictly adhered to by the furnaces. On Thursday of last week another advance of 25c. per ton went into effect, making the price of No. 2 Foundry \$10.25, f.o.b. cars St. Louis. Sales are not particularly heavy but are larger than for previous 30 days, and what they lack in size is made up in quantity. The demand for Foundry and No. 1 Soft is particularly heavy at this time, and furnaces are unable to keep their stocks of these grades in any kind of respectable shape. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.75 to	\$11.00
Southern Coke, No. 2 Foundry.....	10.25 to	10.50
Southern Coke, No. 3 Foundry.....	10.00 to	10.25
No. 1 Soft.....	10.25 to	10.50
No. 2 Soft.....	10.00 to	10.25

Metal Market.

Pig Tin.—The downward course of prices has not been arrested nor has the weakish undertone of the market shown any sign of healing. Prices have not declined during the period under review as much as they did in either of the preceding three weeks, but the tone is quite as soft, since buying interest continues to be exceedingly tame, not only in speculative quarters but among the outside trade. The consumptive demand has been merely moderate. The decline in prices and hesitancy of buyers is attributed in good part to the monthly statement, showing an increase of 1793 tons in the visible supply for Europe and American, making the total 25,671 tons, or enough for five months' consumption. Weak Singapore cables have also had more or less unfavorable influence. The price of small lots of Straits Pig from store is quoted at 15½c. to 16c. per lb.

Copper.—Dealings have been on a somewhat smaller scale in the past week and the market at one time seemed to have lost some of its buoyancy. On Tuesday there was freer offering, with lower prices made and surface indications of something in the nature of a "bear" movement. This movement turned out to be an effort at manipulation, apparently to effect the London market, and was measurably successful. Later in the week, however, the market reacted to its former higher level. A very fair business has been done in Lake Ingot as well as in Electrolytic and Casting Copper for consumptive purposes. For small lots of Lake Ingot from store, quotations are firm at 1½c. and of M. C. B. at 10½c. to 10¾c. per lb.

Sheet Copper.—The market for Manufactured Copper increases in firmness under advancing prices in raw materials and a healthy consumptive demand. All the mills are busy, and consumers evince an increasing tendency to require prompt shipments. The outlook generally is for brisk business in Cornice Copper as the numerous buildings now under construction progress toward completion. Prices are decidedly stiffer, and it is considered likely that a general advance in the list rates for manufactured Copper will be inaugurated before long if the present advance in raw material continues. Small lots of Sheet Copper from store are quoted at the net list price of 14c. per lb., and this price has been paid on some large orders where prompt delivery was necessary.

Pig Lead.—A decided change has taken place. Higher prices by cable and favorable prospects for export business acted as an offset to the "bearish" features that upset the market for a time last week, and a more decided stand taken by Western producers also had some influence. Transactions here have not been heavy, yet of sufficient volume to carry wholesale prices up to 3.30c. In the smaller jobbing business the movement has been very fair and prices have remained firm. Jobbers ask 3½c. to 3¾c. per lb. for moderate sized lots of American Pig.

Lead Pipe.—Considerable improvement is manifested in the demand for these materials. The requirements of consumers, both for current use and for stock, have shown a notable expansion during the past week, and the outlook for a liberal business during the coming months is considered bright. Manufacturers are busy on orders and prices of Manufactured Lead have stiffened, although the list rates in this section have not yet been advanced. With the recent rise of raw material, however, it is regarded as probable that the list may be revised at an early date. Lead Pipe in small quantities from store is quoted by jobbers 5½c., and Sheet Lead at 6½c., subject to the usual discount.

Spelter.—Dealings have been only fair in volume, and individual transactions involving more than two or three carloads were strictly the exception. The position of supplies at primary points and the attitude of producers have, however, brought about a further advance in wholesale prices. The smaller trade has shown considerable activity and the demand from galvanizers has been brisk. The current rates for small lots of good Western brands from stock rule at about 4½c. per lb.

Sheet Zinc.—A scarcity of this material still prevails. Shipments from the mills are not obtainable with any

promptitude. Prices remain high and depend largely on the necessity of the buyer. The average rate for 600 lb. casks runs at 6.50c. and for smaller lots at 7c. per lb.

Antimony.—There has been little doing outside of routine trade. Prices remain at about 9c. for Cookson's, and 8c. for Hallett's in small parcels.

Nickel.—Sellers' figures remain at 35c. to 40c., according to quantity and terms.

Tin Plate.—Buyers' operations have been rather tame. In the larger scale of business the only movement is in spot purchases of cokes for canners' use, in which some good sized transactions have been recorded. Aside from this dealings have not exceeded large retail proportions. Very few orders for future deliveries have been placed during the week and business in this line has proved decidedly disappointing. Jobbing business, however, has been very fair and sufficient to keep prices quite steady at last week's level. In fact, an advance is asked in the case of certain grades of imported Plates, which are scarce at the present time, otherwise the Tin Plate market has not yet responded to the generally advancing feeling in the metal markets. American Ternes are moving freely in a retail way. The domestic works are all more or less busy on orders, and some of the leading manufacturers will not quote for early deliveries at all, while in some cases they ask on shipments for July, August and September an advance on present rates. The general tone of the market is firm.

A special London cable dispatch of June 5 to the *Iron Age* reports on the British Tin Plate market as follows: Tin Plates have been quiet. Business of a holiday nature and mostly in small lots for immediate delivery. There is more demand for Ternes and some good American orders have been received. There is a better demand for Black Plate, but prices are unchanged. Stock at shipping port about 174,000 boxes. Prices, f.o.b. Wales, are as follows:

Bessemer Cokes, 10 14 x 20 9s. 3d. to
 Siemens Cokes, 10 14 x 20 9s. 4½d. to 9s. 6d.
 Ternes, 20 x 28 18s. to 22s. 6d.
 Charcoals, 10 14 x 20 11s. to 13s. 6d.

Sheet Iron.—One of the largest makers has sent out notices to the trade of a further advance in Galvanized Sheets, and they are expected to go still higher before long. Sheets can hardly be had at any price just now, the mills being crowded with work and away behind in deliveries. Some mills decline to quote and others quote for immediate acceptance only. Most are refusing to name prices for delivery beyond July 1, preferring to wait the outcome of the conference on the wage scale. In a few cases where August deliveries are quoted on it has been at a substantial advance over current prices. The demand for Galvanized Sheets in this district is active and not easy to fill. Black Sheets also come in for a good share of attention by consumers. Black Plates for tinning purposes are in particularly brisk request by dipping concerns, some of which have been considerably hampered in their operations lately by the difficulty in obtaining sufficient material to work on. Small lots of Galvanized Iron from store are still quoted by jobbers at 75 per cent. off, and of No. 27 Common Iron at 2.80c per lb.

THE STEAM AND HOT WATER HEATING TRADE will be interested in the an-

nouncement in another column made by Edward P. Bates, Syracuse, N. Y., relating to Standard Flange Schedules. The schedule of Standard Flanges as prepared by the American Society of Mechanical Engineers, the Master Steam and Hot Water Fitters' Association and a committee of the leading Valve and Fitting manufacturers of the United States, is now on sale and can be obtained from Mr. Bates.

Chicago Report.

Scrap.—Trade is looking much better. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton. Per lb
No. 1 Wrought Scrap.....	\$7.50
Machinery Cast.....	6.00
Malleable Cast.....	6.00
Stove Plate (free of burnt)...	4.90
Burnt Iron and Grate Bars.....	2.50
Sheet Iron and Hoops.....	2.00
Plow Steel and Breaking Stock.....	3.00
No. 2, such as Shovels, Hoes, &c.....	2.50
Old Boilers—whole (Iron).....	3.00
" (Iron)—cut in single Sheets and Rings.....	5.00
Old Gas-Pipe and Boiler Tubes.....	5.00
Cast Borings.....	3.25
Turnings.....	4.00
Horseshoes.....	8.00
Copper Wire and Heavy.....	8
Copper Bottoms.....	7
Copper Clips.....	7½
Heavy Brass.....	6½
Light Brass.....	8½
Pipe Lead.....	2½
Tea Lead.....	2½
Zinc.....	2½
Rubber.....	4

Anthracite.—The country trade is improving. Carload lots of 12 net tons or over are quoted as follows

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.00 \$4.75
Milwaukee, Wis.....	4.60 4.75
Kansas City, Mo.....	7.80 7.95
Council Bluffs, Iowa.....	7.80 7.95
Lincoln, Neb.....	7.95 8.10
Sioux City, Iowa.....	7.80 7.95
Aberdeen, S. Dak.....	7.85 8.00
Dubuque, Ia.....	8.90 6.05
Madison, Wis.....	7.10 6.25
St. Paul, Minn.....	7.10 7.25
Burlington, Iowa.....	6.10 6.25
Des Moines, Iowa.....	7.60 7.75
Davenport, Iowa.....	5.90 6.05
St. Joseph, Mo.....	7.80 7.95
Leavenworth, Kan.....	7.80 7.95
Omaha, Neb.....	7.80 7.95

Colorado Anthracite.

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

THE PENNSYLVANIA WIRE WORKS, Edward Darby & Sons, Philadelphia, Pa., have just issued an illustrated catalogue and price-list of 122 pages, devoted to Brass, Copper, Steel, Iron and Galvanized Wire Cloth, Wire Window Guard and Wire work of all kinds, Wrought Iron and Brass Grilles for all purposes, Radiator, Nursery and Spark Guards, Roof Crostings, Window and Door Screens.

BERTHA ZINC & MINERAL COMPANY, whose New York City office is at 30 Burling slip, report a very active business in their special brand of pure "Bertha" Spelter, used for fine castings. The company's smelting works, located near Pulaski, Va., are running to their full capacity.

CONDITION OF THE

Hardware Trade.

THE MARKET is characterized by the same general features as for the past week or two. There is continued firmness in Iron and Metals, and a stronger tone in the heavier goods in which the raw material is an important part of the cost. There has been, accordingly, in several such lines a withdrawing of extreme prices and in some cases the announcement of advances. There is, however, a good deal of conservatism in this matter on the part of manufacturers, as they are disposed to hold back announcements of higher prices until pretty well assured that the future course of the market is going to justify such action. It is recognized that premature advances while causing a temporary improvement in the general tone, are unwise, as the reaction, if it should come, is likely to be injurious. The care which manufacturers are, therefore, exercising is to be commended, especially as in some directions there is something of a tendency to overestimate the necessity for making higher prices, and the impression prevails that in some cases this matter has been overdone. At the same time it is to be remarked that manufacturers generally who are making lines of goods not so directly affected by the higher price of raw material are disposed to refuse to accept heavy orders at present prices, and some of them are wisely withdrawing the lowest prices at which only a short time ago they were willing to sell. It is recognized as probable that prices on many goods will be higher with the increased cost of the raw material and perhaps advanced wages. There is certainly a disposition on the part of the large trade to buy much more freely than for a long time.

The advances which have recently occurred, many of them on lines of goods in which the jobbers had an opportunity to cover their requirements, have certainly given the market a perceptibly better tone and the jobbers are thus afforded an opportunity to realize a handsome profit on many goods. It remains to be seen to what extent they will improve the opportunity of realizing a profit for themselves and at the same time help the general tone of the market. In the past it has too often been the experience of the trade that goods purchased prior to an advance have been to a large extent used to undersell the manufacturers, and it is to be regretted that there are indications in several lines that this is still being done to some extent. This is certainly a matter which is deserving the most careful attention of the jobbing trade, and the subject might appropriately have a prominent place in the questions considered at the conventions of the different organizations representing the jobbing trade. With the indications of general improvement the wholesale merchants, through whom so considerable a proportion of the retail trade obtain their goods, have an opportunity which, it is to be hoped, will not be disregarded.

Advices from Chicago.—The orders for Shelf Hardware are increasing in size, making volume of business larger than during the previous weeks. Trade would be much heavier if country merchants were not so distrustful of the advances which they are asked to pay. They have so long been accustomed to a falling market immediately following some slight upward movement, that they are apprehensive of a similar condition of things this summer. Nevertheless they are obliged by their increasing trade to

purchase larger quantities of goods. Jobbers are expecting higher prices on small goods after July 1, when a number of new lists will be out. Manufacturers are now finding it an easy matter to get together on prices. Old troubles are disappearing and long standing fights are being ended. A new list is out on Strap and T-Hinges, and they are now likely to be considerably dearer with the closer relations existing among manufacturers. Tin Plate is very active and firm, with no change in prices thus far, but with conditions ripe for an early advance.

Notes on Prices.

Wire Nails.—During the past week the arrangement between the manufacturers of Wire Nails has been in operation and the trade have had an opportunity to become familiar with the working of the plan so far as it has been developed. As a result of the fact that all the prominent makers of Wire Nails are thus associated in a strong organization the tone of the market is decidedly firm and orders have been placed very freely at the advanced prices. This is owing to the fact that the trade generally regard the new arrangement with confidence in its stability, and anticipate that the manufacturers will be able to control the market. Prices for June continue without change. Small lots from store in New York are regularly quoted at \$1.55 base, and from dock, \$1.51. A good many parties are taking advantage of the provision by which a rebate of 5 cents per keg from the carload price is made to those who purchase 1000 kegs during the present month, especially as the impression prevails that production during July will be considerably curtailed in order to give the mills an opportunity to take account of stock, make necessary repairs and at the same time avoid an undue accumulation of Nails. In accordance with the policy adopted a meeting of the committee in charge will be held within a day or two with a view to considering the price which should be determined upon for July. The impression prevails that a further advance will be announced on Nails in kegs and also on the miscellaneous list goods. The arrangement for the protection of the jobbing trade is generally regarded as satisfactory and giving them as wide a margin as they will be likely to retain.

Advices from Chicago.—The Wire Nail situation is very strong. Manufacturers are already withdrawing the new quotations, although the month is not a week old; several of the largest mills cannot at present take any more orders, having all the business they are in a position to handle. The prospects favor still higher prices in a few days, owing to the strength of the market. Raw material is dearer, and this in conjunction with the good demand is expected to force values to a higher level than the present carload rate of \$1.35, Chicago. Jobbers quote small lots from stock at \$1.40.

Cut Nails.—The Cut Nail market is very firm and there has been an important advance since our last report. The manufacturers have an organization similar to that of the Wire Nail manufacturers and are apparently in excellent position to control production and prices. They are making quotations only for the month of June and refuse to accept orders for delivery later than the 30th inst. Carload lots on dock New York are held at \$1.30 base, and

small lots from store in New York at \$1.40 base.

Advices from Chicago.—Manufacturers of Cut Steel Nails have advanced prices to \$1.30, Chicago, for carload lots of 60 cent average. This price is named only for June delivery, the same policy having been adopted as in the case of Wire Nails. Jobbers quote small lots from stock at \$1.25.

Barb Wire.—In sympathy with the general tone of the market Barb Wire is held firmly. Manufacturers are generally indisposed to make concessions from this figure.

Advices from Chicago.—Conditions have not changed in the Barb Wire trade. The factories are full of work and prices are very firm. It is expected that the Barb Wire manufacturers will shortly get together and that this trade will be put in a stronger position for fall business. Jobbers are selling small lots of Painted at \$1.70 and of Galvanized at \$2.05.

Wrought Iron Pipe.—There is a good deal of activity in Wrought Iron Pipe and many inquiries. Some large orders have recently been placed and the manufacturers are generally well occupied. The tone of the market is firm and outstanding extreme prices have been withdrawn and in some cases advances made on both Plain and Galvanized Pipe. Discounts in this section have been reduced to the following figures:

1½ and under, Plain.....	67½ %
1½ and under, Galvanized.....	69 %
1½ and over, Plain.....	75 %
1½ and over, Galvanized.....	65 %

Steel Goods.—In view of the low prices which have ruled during the past season on Steel Goods some of the large buyers are endeavoring to place orders for next season, but the manufacturers are generally refusing to accept them on former terms, anticipating that it will be feasible for them to obtain considerably better prices.

Bolts.—The market for Bolts, including Carriage, Machine, Stove, Tire, &c., is in excellent condition and characterized by a firm tone. The manufacturers of Stove and Tire Bolts are considering the question of prices and whether or not it is desirable to make an advance in these goods.

Wrought Iron Goods.—The Wrought Iron Goods market continues in about the same condition as prevailed last week, with a further improvement, as most of the lowest prices current have been withdrawn by the manufacturers, and there is a nearer approach to uniformity in current quotations.

Cordage.—The most important event since our last reference to the Cordage market is the appointment of receivers for the United States Cordage Company, an event which was not unexpected in view of the recognized difficulties under which the company was operated. Its effect was therefore to a large extent discounted, and it is anticipated that it will have no direct influence on the Cordage market. It is understood, however, that the company have a considerable quantity of Cordage on hand, and if this should be forced on the market it might have the effect of disturbing prices for the time being.

Palm Oil.—An improved demand from Tin Plate manufacturers for the higher grades of Palm Oil has developed in the past week or two. Prices are also stiffer.

Asbestos Torch.—The Asbestos Torch, an illustrated description of which was given in *The Metal Worker* last week, is manufactured by the Asbestos Torch Company, 153 Milk street, Boston, and is sold to the trade at \$4 per dozen.

Mangle.—The Petersen Mangle, manufactured by Petersen & Fischer, 166 Pierpont street, Brooklyn, N. Y., of which an illustrated description was given in our last issue, is sold to the trade at \$8.50 each.

Glass.—The demand for American Window Glass is reported as being fair, showing an increase over that of preceding weeks, but as not overtaxing either the manufacturer or jobber. The shipments of Glass for the past month or two, it is understood, have not exceeded the production for the same period. Prices as a rule continue firm, as manufacturers appear to realize the necessity of maintaining a profitable figure. The discounts which went into effect and apply to the new list of Window Glass adopted May 1, 1895, are as follows: Less than 100 boxes, 75 and 5 per cent. discount; car lots, 75 and 10 per cent., and 1000 boxes, 75 and 10 and 5 per cent. discount. Business in Plate Glass continues to improve, and although the 60 day shut down of the factories of the Pittsburgh Plate Glass Company is now at an end there are no indications of an immediate resumption.

Old Metals.—A marked improvement is noted in the market for Old Metals. In sympathy with the advance which has taken place recently in every line of metal, prices on Scrap are also higher. Some considerable shipments of Old Copper and Brass have been made lately to Italy and other foreign countries, and the demand from this quarter is still quite active. For Scrap Iron the demand is quite brisk and dealers are offering higher prices. The following quotations represent the rates now being paid for moderate sized lots by dealers, New York delivery:

Heavy Copper.....	lb 75¢
Light and Tinned Copper.....	lb 74¢
Heavy Brass.....	lb 5¢
Light Brass.....	lb 4¢
Lead.....	lb 3¢
Tea Lead.....	lb 28¢
Zinc.....	lb 25¢
No. 1 Pewter.....	lb 41¢
No. 2 Pewter.....	lb 41¢
Wrought Scrap Iron, gross ton.....	\$8.00 @ \$8.50
Heavy Cast Scrap..... gross ton.....	8.50 @ 9.00
Stove Plate Scrap, gross ton.....	8.00 @ 8.50
Burnt Iron..... gross ton.....	5.00

Old Rags, Paper, &c.—Paper Stock has been moving actively in the past week. Dealers' purchasing prices, New York delivery, rule as follows:

No. 1 White Rags.....	lb 3¢ @ 3½¢
No. 2 White Rags.....	lb 2¢ @ 2½¢
Mixed Rags.....	lb 1¢ @ 1½¢
Blues and Sds.....	lb 1¢ @ 1½¢
Hard Sized White Shavings.....	lb 2¢ @ 2½¢
No. 1 White Book Shavings.....	lb 1½¢ @ 2½¢
No. 2 White Book Shavings.....	lb 1¢ @ 1½¢
Night Book Shavings.....	lb 1¢ @ 1½¢
No. 1 Mixed Shavings.....	lb 1¢ @ 1½¢
No. 2 Mixed Shavings.....	lb 1¢ @ 1½¢
No. 1 Printed Books.....	lb 1¢ @ 1½¢
Ordinary Mixed Books.....	lb ½¢ @ ¾¢
Newspapers.....	lb ½¢ @ ¾¢
No. 1 Manila Paper.....	lb ½¢ @ 1¢
No. 2 Manila Paper.....	lb ½¢ @ ¾¢
Bogus Paper.....	lb ½¢ @ ¾¢
Common Paper.....	lb ½¢ @ ¾¢
Straw Chips.....	lb ½¢ @ ¾¢
Binders' Clippings.....	lb ½¢ @ ¾¢
Jute Butts.....	lb 1½¢ @ 19¢
No. 1 Jute Bagging.....	lb 1¢ @ 1½¢
Mixed Bagging.....	lb ¾¢ @ 1¢
No. 2 Bagging.....	lb ¾¢ @ 1¢
Hemp Twine.....	lb 2¢ @ 2½¢
Manila Rope.....	lb 2¢ @ 2½¢
Jute Rope.....	lb 1½¢ @ 19¢
Mixed Rope.....	lb ¾¢ @ 1¢

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, lb.....	3¢ @ 3½¢
Rubber Shoes, carloads, delivered at factory, lb.....	4½¢
Rubber Shoes, less than carloads, lb.....	4½¢
White Wringer Rolls, lb.....	3½¢
White Springs, lb.....	3½¢

Trade Notes.

ELSEWHERE in this issue will be found the announcement of the Nivn & Hassard Tin Plate Company of Philadelphia, Pa., who call attention to their assortment of Tin Plates and give their brands of roofing and brights.

THE MONTHLY CALENDAR BLOTTER distributed by the Joseph Dixon Crucible Company, Jersey City, N. J., breathes forth the lazy atmosphere of June by means of a combination of a stream, a fish line, a tree trunk and a boy.

A PLANT for manufacturing Pumps and Heaters is to be erected by Pharr & Moffatt at Charlotte, N. C.

THE PLANT of the Youngstown Stamping Company, Youngstown, Ohio, manufacturers of Oil Cans and Tinware Specialties, has been sold by W. C. Hine, receiver, to Ensign Brown, representing a committee of creditors, for \$13,525.27. The plant has been operated by W. C. Hine, receiver, for several years past, and a new company are now being organized by the creditors, who will take possession of the property some time during this month.

NEGOTIATIONS are understood to be on foot looking to the resumption of operations at the Soho Iron & Steel Works of Moorhead-McCleane Company, at Pittsburgh, Pa.

JAMES L. PRYOR, JR., has opened an office in the Beekman building, 101 Beekman street, New York. He is prepared to furnish Sheet Brass and Copper and Aluminum, and is the agent for the F. L. Gaylord Company, Ansonia, Conn.

GURDEN CORWITH, Room 211, Beekman building, Beekman and Pearl streets, New York, is prepared to supply new and old Metals to the trade. He has recently made a shipment of 300,000 pounds of Scrap Brass to Italy.

THE MISSOURI BRASS TUBE FOUNDRY COMPANY of St. Louis, Mo., were recently incorporated, with a capital stock of \$50,000, by C. A. Manuel, W. J. Kenefic and Frank Leboha.

THE ERIE FOUNDRY COMPANY of Rochester, N. Y., have been incorporated, with a capital of \$12,000, to manufacture Iron and Brass Castings. The directors of the new concern are Frank H. Clement, J. Elwood McKelvey and Robert J. McKelvey of Rochester.

THE AMERICAN GALVANIZING WORKS of the McDaniel & Harvey Company, Sixteenth street and Washington avenue, Philadelphia, were damaged by fire on June 5 to the extent of \$3000 or \$4000. The flames originated, it is thought, from a live electric wire coming in contact with oil in the paint shop. After much hard work on the part of the firemen the flames were confined to the paint shop and stable.

New York City will this year spend about \$780,000 for new asphalt paving, principally in the poorer quarters of the city.

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Some Dissatisfied Ones.

In circulating among the different trades which form the constituency of *The Metal Worker* it is exceedingly gratifying to find that the ruling sentiment to-day is one of marked cheerfulness. A revival of confidence in the present and of hopefulness in regard to the future is apparent. This is very pleasant to contemplate, after the long spell of depression through which all the trades have just passed. Nevertheless this wholesome atmosphere is not by any means universal. There are quite a number of men one meets who seem to have become so permeated with pessimism, as the result of two years of disappointment and discouragement in their business, that even with the multiplying evidences of returning prosperity all around them they cannot shake off the complaining tone to which they have accustomed themselves. If you ask them how they find business they will reply with a lugubrious air that it is very dull. On further inquiry you will probably elicit the fact that they are doing more business than they did a few months ago or at the same time last year. But they hasten to explain that it is all done at such low prices that there is really no profit in it. Or they may say that business is a trifle better, but that it is on the whole disappointing and not at all up to the standard they had looked for. As to the future, they see nothing to encourage them in the hope that it will ever be better. At the same time, perhaps, the man next door and another across the way, who are engaged in precisely the same kind of business, will tell you that they find things very brisk. The fault, of course, lies with the man himself and not with business. He has made up his mind for a big boom, both in the volume of business and in prices, and the boom has not materialized. Instead thereof a steady and gradual increase in the amount of business has taken place, almost imperceptible, per-

haps, as yet in some directions. But this does not fulfill his expectations and desires. He is, accordingly, soured and determined to see no good in anything under the sun. He forgets that as Rome was not built in a day, so prosperity, to be enduring, cannot come by leaps and bounds. It is far more satisfactory that the improvement in general business is developing in a gradual and positive manner than by any inflated methods. The promise of permanence and stability which the present ratio of improvement gives is thoroughly appreciated by all far seeing and sensible business men.

Sanitary Exposition in Paris.

An International Sanitary Exposition was opened in Paris, on the Champs de Mars, on June 1, and will continue until September 15. The exhibition is under the patronage of the French Ministers of Commerce of the Interior and of Public Works, as well as of various learned societies and industrial associations. The exhibition is divided into ten classes, being, respectively, Hygiene of Dwelling Houses; Municipal Hygiene; Prevention of Infection; Demography and Sanitary Statistics; Sanitary Science; Hygiene of Infancy; Industrial and Professional Sanitation; Food Hygiene; Hygienic Clothing, and Physical Exercises. Class 1—Hygiene of Dwelling Houses—includes instruction in preparation of ground; underground arrangements; light; heat and ventilation; water supply; baths and lavatories; sewage treatment; sinks and water closets; sanitary ware for the household; and special sanitary arrangements for hospitals, barracks, prisons, theaters, public halls, &c. Class 2—Municipal Hygiene—includes water supply; purification; filtration; street cleaning; treatment of sewage and refuse; street lighting; gas; electricity, &c. In conformity with the municipal law recently passed in Paris, the whole of the house drainage in that city will have to be rearranged in the course of the next three years on a plan similar to that in use in England. This will necessitate a revolution in the sanitary arrangements of Paris and will involve a great demand for improved forms of sanitary apparatus. It is in order that these may be brought under the notice of the engineers and architects of Paris that this special sanitary exhibition has been opened.

An Eastern municipal engineering club has gathered statistics from the city engineers of 300 cities of more than 10,000 population, which show that more public work will be undertaken during the coming summer than ever

before. It is estimated that expenditures for paving, lighting, sewerage works and bridges will approximate \$200,000,000. Last year less than one-fourth of this amount was expended in city improvements.

Economy in Division of Labor.

We were recently surprised, while visiting a large and well known establishment engaged in the manufacture of machine tools, says *The Iron Age*, at the extremely low cost of producing some of the parts. Inquiry developed the fact that this was due, primarily, to the method pursued in apportioning the work and was not, even indirectly, the result of the use of any special appliances. It was a most refined appreciation of the prominence played by the cost of labor in producing the parts and the division of this labor so as to yield the greatest results for the least expenditure. It did not come as a sequence to small wages, as the average amount paid was unusually high.

All work not to gauge and which did not require undue accuracy was performed by the cheapest help. In cases in which close fits were necessary the parts were roughed out and brought nearly but not quite to a fit by cheap labor, the actual fitting being done by more experienced and higher priced men. In the storeroom all the pieces of certain parts of a machine were placed together; for instance, all the parts of a lathe carriage or apron were grouped together. But these parts were not finally fitted and the apron assembled until it was decided to build a number of lathes of that particular type. Then the parts were taken to the expert mechanic, who had so little work to do that his contribution in wages to the total cost was insignificant.

In the storeroom every piece carried a tag giving the exact cost of the work done on it up to that time. With this as a guide the cost of the completed machine was simply the sum of the cost of all the parts, in addition to the cost of the last fitting and assembling. With the exception of parts like handles, the cost of which was carried in groups or by the dozen, the cost of making each individual part was placed upon it. This was done as a check. If one part cost more than the average, an inquiry developed the cause and suggested the remedy. Not the least important advantage of the system is the facility it offers for charging for parts for repairs. There is absolutely no guesswork and the prices charged are fair to both the builder and user of the machine.

THE LETTER BOX.

Greenhouse Heating.

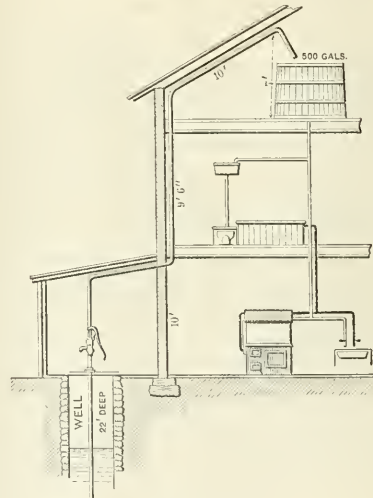
From J. Y. N., Jersey City, N. J.—In *The Metal Worker* of June 8 I notice the inquiry of "F. M. P." for information on greenhouse heating. Instead of calculating by the cubic feet thumb rule for calculating radiation for house heating and greenhouse work the estimate is made from the square feet of glass surface exposed. This varies with the temperature of the water and the climate. Ordinarily 1 square foot of heating surface is assumed to heat from 2 to 3 feet of glass surface. If the building is sheltered and the water circulates at a temperature averaging close to 180°, 1 square foot of surface in the pipe will take care of 3 feet of glass surface. If, on the other hand, the building is in an exposed position, where the wind will have full sweep at it and water circulates between 150° and 160°, 1 square foot of heating surface will be required to heat 2 feet of glass surface. At the present time there are two classes of greenhouse heating men, some favoring the old fashioned 4 inch cast iron pipe, and others preferring 2-inch wrought iron pipe. The cast iron pipe, roughly calculated, exposes 1 square foot of heating surface per lineal foot, while of the 2-inch wrought iron pipe it takes 1½ lineal feet to expose 1 square foot of heating surface. It is claimed that, owing to the larger bulk of water in the 4 inch pipe, better service is rendered in case of the fire going down; the larger body of water will take a longer time to cool off and will prevent the plants in the greenhouse being frozen, when a smaller 2-inch pipe will cool more quickly and with greater risk to the plants. When the 2-inch pipe is used wrought iron pipe is generally preferred, owing to the ease with which it may be fitted up with the ordinary pipe threading and fitting tools. When the cast iron pipe is used joints are made with iron filings for a cement, first calking into the hub of one pipe around the spigot end of another piece of pipe to prevent the iron filings getting inside of the pipe. The iron filings are then wetted down with water which is slightly salted. These pipes are usually run under the benches on which the plants are set; and, where three or four pipes are required to present sufficient surface they are placed on a level, not one above the other. At the high points in the heating coil an air valve must be located and the system fitted with an expansion tank, as the water will expand ⅓ of its bulk, or when heated 22 gallons of water will occupy the space of 23 gallons. The top of this expansion tank must be above the highest point in the heating system. It is best to draw a plan to a scale of the building to be heated, with the plant benches laid out upon it, and then lay out the piping on the plan. In this way all the probable difficulties that will arise in piping the job will be met in advance and arrangements can be made to overcome them. After the amount of radiation has been determined the size of the boiler required can be calculated by dividing the amount of radiation required by from 10 to 15, which is the amount of heating surface that 1 square foot of grate surface in an ordinary boiler will carry. When the amount of radi-

ation which is required in the greenhouse has been found the selection of the boiler is not very difficult, as in these days all manufacturers give a rating of the radiation which the different sizes of their boilers will properly take care of. It is always best, however, to use a larger boiler than will just do the work; and if the heating contractor will take sufficient time and interest to explain the value of ample heating capacity in a boiler to his customer he will probably have no difficulty in getting the increased price that the larger boiler will cost. If "F. M. P." will submit his greenhouse plan to a first-class heating engineer, and spend the time with him while the cal-

give rise to the chloride formation, and furthermore the chloride is soluble in water and would not, therefore, remain on the metal. Wherever there is visible evidence of the corrosion of zinc it is decidedly unwise to drink water contaminated by it.

How Can a Windmill be Attached?

From J. G. S., Norristown, Pa.—I submit the following sketch of the water works system in my house, and I would like to learn from the readers of *The Metal Worker* some way to



How Can a Windmill be Attached?

culations are being made, the information which he will gain will be of far greater value than the fee which he will have to pay.

Zinc Vessels for Drinking Water.

From F. F. F., Providence, R. I.—There is a difference here as to drinking water which has been confined in a galvanized iron tank for a period of from eight to ten hours. Some claim that at the top edge of the water line and on the edge of the tank there is a white powder, which is chloride of zinc and is poisonous.

Note.—We do not believe that zinc is a proper material to hold drinking water. It is quite easily corroded and the salts of zinc are harmful. In the case cited by our correspondent, however, we do not think he is right in referring to the salt as a chloride of zinc; it is more likely the oxide or the carbonate. There should be no chlorine in the neighborhood of the tank to

change the supply from a hand force pump to a windmill. I do not wish the windmill to be attached to the building, but wish it away from the house, yet I desire it to be attached to the same pump without taking it out or going to any great expense. It is quite probable that some of the readers have solved a similar problem in the past and I know that their method will be of interest to more than myself alone.

Note.—We hope our readers will respond to the request of this correspondent, who, however, will also find some information that may be useful to him in *The Metal Worker* of May 11.

Tinning Black Iron.

From J. W. H., Whitesville, Mass.—Will some of the readers of *The Metal Worker* please inform me through the Letter Box what is the best method of mixing a solution for tinning black iron?

Note.—We are quite at a loss to understand what our correspondent desires. There is a pickling solution to

which the black iron, if in the form of sheets, is subjected, but this is merely acid and water and really has nothing to do with the tinning. The tinning solution, if we can so term it, is a bath of melted tin. Perhaps we have entirely misunderstood our correspondent, and if so we shall be glad to have him explain his wishes further.

Setting Floor Tile.

From M. S. E., Westminster, Md.—I would like to get some information about laying a tile floor in a bathroom and also about setting the tiles for wainscoting. I do not know what kind of cement to use for laying the tile on the floor, or how the tiles in the wainscoting are kept in place until the cement sets.

Note.—We shall be glad to have our readers give their methods of doing this work. In order that our correspondent shall have some information to aid him in his work he can adapt the following suggestions to his use. A common practice is to nail strips lengthwise to the joists far enough below their top surface to permit a board flooring to lay upon them, with a brick pavement on top of this again, so that the surface of the brick just comes flush with the top of the joist. After the floor is thus prepared it is grouted with a cement made of one part good sharp clean sand and from three to five parts of Portland cement. After this has been carefully done and the surface leveled up while the cement is yet soft the tiles are bedded into the cement. It will be readily seen that the greater the care used the smoother and more level the floor will be. For wainscoting, the face between the studs is filled in with a board back up to the height the wainscoting is desired, and sufficient space is left for brick on edge to be set in good mortar against this back. The surface should be plastered over the same as if it were to be a finished wall and then the face scratched in order to make a key for the cement. In setting the tile of the wainscoting more skill is required, and in order to have the cement set quickly and smoothly a quantity of plaster of paris is mixed with it. The success of getting a smooth, true surface for the wainscoting depends largely upon smoothing up the surface of the brick work before using the cement.

Tarred Paper Under Roofing Tin.

From A. S., Paris, Ill.—Will the readers of *The Metal Worker* inform me if tarred paper placed under a tin roof will injure the tin? What kind of paper is the best to place under a tin roof?

Sheet Metal for Ventilator.

From J. W., Perryville, Mo.—I wish some readers of *The Metal Worker* would inform me through the Letter Box which would be the better material to use for a common 6-inch ventilator, tin or black iron.

Note.—As our correspondent has so specifically requested the opinions of our readers we will leave it to them

to answer him, although we cannot understand why he should be in any doubt about the merits of tin and black iron for a ventilator which is, presumably, exposed to the weather and would need some protection against rust.

Weight of a Metal Brick.

From INQUIRER, New York.—Is gold the heaviest metal? A friend of mine makes the assertion that a man cannot carry a block of gold the size of a brick. This seems very absurd to me and I think he is a little off in his calculations. What will a block of gold the size of a brick weigh?

Answer.—Our correspondent's friend is not so far off as he thinks, and while an ordinary man would be able to carry a gold brick we think it would be a difficult matter to pick it up from the top without a handle. A block measuring $8\frac{1}{2} \times 4 \times 2$ inches, if made of pure gold, would weigh $46\frac{1}{2}$ pounds. There are, however, three known metals heavier than gold, the best known of them being platinum, which if made in the form of a brick would weigh 51 $\frac{1}{2}$ pounds. Iridium and osmium are metals which are also heavier than gold. The latter is the heaviest known metal, and an amount the size of a brick would weigh almost 54 pounds.

Soldering Aluminum.

From D. L. W., Moodus, Conn.—I would like to know through the Letter Box if aluminum can be soldered with tinners' solder, or half and half solder?

Answer.—One of the difficulties in working aluminum is to solder the metal, and special solders have to be used for the purpose, the ordinary tinner's solder not being suitable.

Iron and Brass Pipe Plumbing.

From T. E., Hamilton, N. Y.—I would like to find out through *The Metal Worker* what is the general custom for connecting basin and bath cocks and closet tanks where iron or brass pipe is used. All the fittings seem to be for lead pipe.

Note.—We trust some of our plumbing readers will furnish the information desired.

The Origin of the Wiped Joint.

From A SANITARY PLUMBER, New York.—On Saturday of every week, when *The Metal Worker* is delivered to me, I go through it carefully and make a note of anything that may prove useful in the future. One subject I have never seen discussed, and that is how the wiped joint originated and who invented it. Is this known?

Note.—We leave this subject for the discussion of our readers. None of the plumbing works at hand give any information on the origin of this art. It has been suggested by one of the most prominent plumbers in this country at the present time that Columbus discovered it when he discovered America.

The Electrical World of New York, in a recent issue, states that from tests and experiments made with an inclosed

electric arc lamp it has been discovered that carbon monoxide in small quantities is produced in the arc. It points out that in small rooms this poisonous gas is formed in sufficient quantities to cause serious results. Consequently adequate ventilation is necessary in all cases where many arc lamps are kept burning.

Electrically Caused Fires.

William McDevitt, chief of the electrical department of the Philadelphia Fire Underwriters' Association, recently gave a demonstration of some of the ways in which fires may be caused by electricity. The first danger was that arising from the common practice of grounding telephone wires on gas pipe. A bad connection is generally made—quite sufficient for telephone purposes—and then if the telephone wire becomes crossed with an electric light wire the larger current, meeting resistance at the ground connection, heats the joint, punches a hole in the gas pipe and the arc formed lights the gas. Mr. McDevitt gave a complete demonstration of the gas and insulation on the wire burning simultaneously. He also exhibited a section of gas pipe that had caused a fire in just this way. The wires in the sockets of electric lamps are liable to touch the casing, when an arc may be formed. For this reason no drapery should be used around the lamp sockets. The advantage of using metal conduits with insulated lining through which to run the wire was demonstrated, a wire outside being dangerously heated while from that inside the conduit there was no risk. A caution was given against the rough handling of flexible cords used for electric lights as a common cause of short circuits and fire. There are other dangers, due to ignorance on the part of the general public of the character of the electric current. In one case on record the walls of a room were upholstered with stuff in which were woven a great number of metal threads. These were in contact with the electric wires, and when the current was turned on the whole room was set ablaze. An obscure danger from frictional electricity has been traced. Sparks may be caused by shuffling the feet on carpet or by the rubbing of silk. Where benzine is used to clean such materials a spark thus caused may give rise to a dangerous fire. It is believed that some benzine fires have been caused in this way. Another cause of fires is the unreliability of fuses. They are put in the line to be burned out when an excessive current is turned on, but, like safety valves, they do not always work. If they fail to fuse a dangerous current may be carried along the line. To obviate this danger a standard should be adopted.

Some French military authorities are proposing that aluminum cuirasses shall be provided for the cavalymen of the French army, on account of the lightness of the metal and of the fact that experiments have proved that aluminum can resist sword thrusts or bayonet lunges. Bullets striking it directly will pierce it, but at close range the present steel cuirasses are equally puerous to rifle bullets. Should, however, a ball strike an aluminum cuirass obliquely the softness of the metal would cause it to glance off, leaving only a dent. This, it is claimed, gives it an additional advantage as a shielding material over other metals.

PLUMBING and GAS FITTING.

Thirteenth Annual Convention of the National Association of Master Plumbers.

The thirteenth annual convention of the National Association of Master Plumbers was held in Philadelphia this week. The strength of the organization was demonstrated in the very large attendance of delegates. Delegations from all over the country began to arrive on the previous Saturday and by Monday the assembly was almost complete.

The headquarters of the association was at the Continental Hotel, the large parlor on the second floor being utilized as a general reception room. The business meetings of the convention were held in the Walnut Street Theater, adjacent to the hotel. The stage was handsomely decorated for the occasion with palms and other plants. An arch representing solid gray granite on polished red granite columns was thrown across the stage, bearing on the top a vase of golden rod and having suspended from the keystone a floral model of the "Liberty" bell. The span of the arch represented 13 stones, emblematic of the conventions held by the organization, each stone bearing a convention date and the name of the city in which it was held. The center, or keystone, of course bore the date of the present convention.

The officers were provided with special furniture, the president having a high paneled table bearing a representation of the seal of the association on its front. The secretary and treasurer occupied paneled tables on either side of the president. A handsome silk national flag and a few well chosen theatrical properties were tastefully grouped in the background and added not a little to the effective setting. The fronts of the balconies and the boxes were draped in the Philadelphia colors, blue and gold, with festoons of evergreens for contrast. A few banners of State associations ornamented the tops of the lower tiers of boxes.

The Executive Committee of the association held a meeting on Wednesday afternoon at headquarters for the purpose of completing arrangements and discussing other matters within their province. The following members comprised the committee:

President, John Mitchell of New York.

Vice-President, L. B. Cross of Kansas City.

Recording Secretary, H. J. Pattison of New York.

Treasurer, W. E. Goodman of Milwaukee.

D. G. Finnerty of Boston, James Meathe of Detroit, Henry G. Gabay of New York, John Trainor of Balti-

more, C. C. Dewstoe of Cleveland and Paul Redieske of Chicago.

TUESDAY MORNING.

At 10 o'clock the delegates assembled in the Walnut Street Theater, completely filling the auditorium. The balconies accommodated a number of the lady visitors who were in attendance to hear the opening addresses.

John E. Eyanson, President of the Philadelphia Master Plumbers' Association, welcomed the delegates on behalf of his association.

Select Councilman Wm. McCach, chairman of the Committee on Arrangements, next introduced the Mayor of Philadelphia, Hon. Chas. F. Warwick, who, in a happy speech, warmly welcomed the visitors to the "City of Brotherly Love." The Mayor's address was responded to with hearty cheers. President Mitchell, in a short speech, then cordially greeted the delegates and expressed the thanks of the meeting for the kindly welcome extended by the City of Philadelphia through Mayor Warwick.

The President then appointed Samuel B. Fleming, Geo. W. Beckett and John Furlow, all of Philadelphia, sergeants-at-arms.

Upon motion a committee on credentials was then appointed, consisting of

Jas. F. Davlin of Somerville, Mass.

Jeremiah Sheehan of St. Louis.

Thos. P. Culloton of Chicago.

H. C. Bowman, Baltimore.

John L. E. Firmin of San Francisco.

The convention adjourned until 2 p.m. to await the committee's report.

TUESDAY AFTERNOON.

Jas. F. Davlin, chairman of the Committee on Credentials, made a report from that committee showing that 15 State and 76 local associations were represented by 397 delegates, a slight increase in the number present at the last convention. Following is a complete list of delegates in attendance, as reported by the committee:

List of Delegates.

ALBANY, N. Y.

Horace F. Wescott, Jos. A. Stahl, John E. Dugan, Edward James, Fred W. Ridgway.

ALLENTOWN, PA.

Jno. H. Birchall, Ang. Liebold, F. E. Whitesell, Bethlehem.

ALTON, ILL.

P. J. Kane.

ALTOONA, PA.

G. M. Stewart, A. E. Akers.

ARKANSAS ASSOCIATION (STATE).

M. F. Smith, Fort Smith; A. A. Mandelbaum, Little Rock; Henry W. Bonner, Hot Springs.

ASHEVILLE, N. C.

W. H. Boyce.

AURORA, ILL.

Russ Lake.

BALTIMORE, MD.

H. C. Bowman, John Trainor, J. F. P. Carey, G. R. Minnick, Daniel J. Barry, J. C. Mitchell, George Knipp, P. A. Sullivan, James Trainor.

BLOOMINGTON, ILL.

R. Loudon.

BRIDGEPORT, CONN.

T. E. Logan, H. B. Middlebrook, G. E. Scofield.

BROOKLYN, N. Y.

Edward MacDonald, H. L. Potter, H. M. Noble, Thomas H. Radcliffe, Edwin Hayward, Geo. B. Lewis, O. O. Sawkins, J. J. Keenan, J. W. Kelley, M. F. Gleason, M. Fallon, L. Haff, Wm. J. Gault, B. J. McBride, Geo. W. Smythe, D. F. Mentzinger, Thos. Kelly, E. McNamara, W. E. Williams, R. J. Knox.

BOSTON, MASS.

Wm. H. Mitchell, David Smith, James F. Davlin, D. A. Horgan, Thos. J. Tute, John K. Tully, J. Warren French, Edward C. Kelly, Wm. A. Tucker, John W. Cosden, James O'Connell, Thomas E. Sharpe, J. C. Kelly, Daniel Shannon, James Tucker, Chas. M. Brownich, D. G. Finnerty.

BUFFALO, N. Y.

James S. Stygal, Jr., Wm. H. Martin, Charles Geiger, C. Brenner, F. H. Yuhl, H. J. Knepper, J. H. Castler.

CHARLESTON, S. C.

W. H. Paddon, A. J. Reily, R. J. Morris.

CHICAGO, ILL.

T. P. Culloton, Jos. B. Breen, J. A. Boltz, Jas. H. DeVeney, J. J. Wade, R. B. Finn, D. J. Rock, P. Sanders, Chas. C. Breyer, Chas. J. Herbert, John G. Roland, J. J. Clark, D. M. Quay, G. A. Larson, T. C. Boyd, C. J. Boyd, Thos. Conway, W. T. Geary, Chas. T. Byrne, Andrew Young, Robert Griffith, Paul Redieske, P. M. Murphy.

CINCINNATI, OHIO.

Robert Carlisle, J. G. Murdock, Oliver Schlemmer, Jas. A. Gibson, E. J. Nolan.

CLEVELAND, OHIO.

D. H. Roberts, W. H. Cleveland, S. W. Burrows, W. J. Warden, A. L. Bacher, C. C. Dewstoe.

COLUMBUS, OHIO.

Samuel Berger, E. J. McNamara, Frank Stratton.

CONNECTICUT ASSOCIATION.

L. H. Mills, Bridgeport; Wm. Vanderman, Williamantic; J. B. Weiant, New Britain.

CHESTER, PA.

S. C. Turner, Irving E. Baker.

DETROIT, MICH.

Jas. H. Crumley, Jas. W. Partland,
Richard Walsh, William G. Burton,
Benj. F. Guiney, Samuel Graham,
John W. Drury.

ELGIN, ILL.

Jas. R. Scanlan, Jas. O'Connell.

EVANSVILLE, IND.

Chas. Wahnsiedler.

FLORIDA ASSOCIATION.

J. W. Roberts, John Einig, Wm.
Clark.

GREEN BAY, MICH.

Edward Thomas.

GRAND RAPIDS, MICH.

G. O. Thompson, Wm. Ringuette, W.
T. McGurrian, Wm. Robertson.

HENDERSON, KY.

L. C. Klee.

HARRISBURG, PA.

J. Wesley Neil, Jas. H. Lutz, J. A.
Kramer.

HARTFORD, CONN.

Edward Mahl, Jas. Abern, Geo.
Mahl.

HAZLETON, PA.

Geo. A. Kiley.

HOLYOKE, MASS.

T. J. Carmody, C. P. Lyman.

HUDSON COUNTY (N. J.).

Edwin H. Moore, Jos. Zumbusch,
Chas. H. Sulk, Wm. J. Cross.

ILLINOIS ASSOCIATION (STATE).

T. B. Davis, Rock Island; John N.
Simpson, Peoria; John O'Neill, Jr.,
Peoria.

IOWA ASSOCIATION (STATE).

Henry Ewinger, Burlington; John
E. Allen, Des Moines; J. A. Harris,
Sioux City; John Burnside, Des Moines;
A. H. Walker, Des Moines; William
Rosene, Des Moines.

JAMESTOWN, N. Y.

James P. Callahan.

JOLIET, ILL.

George Poelner, Robert Meers.

KANSAS ASSOCIATION (STATE).

G. W. Searles, Atchison; F. H. Bow-
ers, Emporia; James Foley, Leaven-
worth; P. H. Bertram, Wichita; C. J.
Prescott, Topeka.

KANSAS CITY, MO.

Geo. P. Kirtley, Capt. Henry Goss,
T. Cotter, J. N. Kimball.

KINGSTON, N. Y.

T. J. Cosack.

LANCASTER, PA.

H. Wood Flinn, D. H. Miller.

LEWISTON, MAINE.

Jno. B. Smith.

LOS ANGELES, CAL.

F. M. Parker, Hugh Smith, Geo. F.
Howe, D. Kavanagh, Jno. Criummins,
L. A. Scholes.

LOUISVILLE, KY.

W. H. Matlack, M. J. Duffy, Ed.
O'Connor, A. M. Ramsey, S. Shul-
hafer.

LANSING, MICH.

F. C. Bennett.

MASSACHUSETTS ASSOCIATION (STATE).

W. H. Mitchell, Boston; Isaac Riley,
Boston; Robt. T. Mitchell.

MADISON, IND.

Andrew Anger.

MACON, GA.

W. P. Bennett.

MADISON, WIS.

Joseph Hussey.

MICHIGAN ASSOCIATION (STATE).

Wm. Lloyd, Manistee; Jos. Cooper,
Pontiac; James Meathe, Detroit.

MILWAUKEE, WIS.

W. E. Goodman, Chas. Polacheck,
W. H. Halsey, Wm. Egan, E. T.
Boyne, Philip Murphy, P. Ferriter,
Ed. Grassler, Ferd. Wittig.

MINNEAPOLIS, MINN.

A. W. Scott, J. P. Courtney.

MIDDLETOWN, CONN.

James Donovan.

MISSOURI ASSOCIATION (STATE).

John Frost, St. Louis; Edward J.
Loneragan, St. Louis; L. C. Cross,
Kansas City.

MONMOUTH COUNTY (N. J.) ASSOCIATION.

J. S. Flitraft, Ocean Grove; Thos.
Bazley and Saml. F. McCloud, Long
Branch.

NEBRASKA ASSOCIATION (STATE).

James H. O'Neill, Lincoln.

NEWARK, N. J.

Elias Berla, N. J. Steiner, C. Sulli-
van, Alex. Don, F. J. Sturm, Robert
Berla, Edwin A. Bleything, Wm.
Zeliff, C. O. Rourke.

NEW BRITAIN, CONN.

George Rapelye, S. H. Beard.

NORTHAMPTON, MASS.

W. H. Riley, Arthur B. Lee.

NEW YORK STATE ASSOCIATION (STATE).

Wm. J. McDermott, New York
City; Chas. Geiger, Buffalo; John
Yule, New York City.

NEW YORK CITY.

Gen. Geo. D. Scott, John Byrns, John
Mitchell, Henry J. Pattison, H. G.
Gabay, Frank Reynolds, J. O. Shum-
way, Jos. W. O'Brien, T. Gallagher,
T. J. Toomey, E. J. Brady, Jas. Muir,
Jas. Morton, T. J. Cummins, Adam
Huston, Edw. Murphy, M. J. McDer-
mott, M. Ryan, Chas. Schlosser, John
Kipple, John Regan, T. J. McCormack,
C. A. Walsh, I. J. Brown, J. G. Collins,
Wm. Kirchoff, Samuel Malcolm, John
Yule, T. R. Delacey, A. H. Brown,
John McCarron, Thomas Martin,
Philip Smith, Jas. Gilroy, Alex. Cam-
eron, Wm. Montgomery, Wm. J. Mc-
Dermott, Alex. Bryant.

NAUGATUCK, CONN.

J. M. Page.

NEW HAVEN, CONN.

S. E. Dibble, W. H. Hazel.

OAKLAND, CAL.

O. C. Kirk, James F. Vane, John H.
Bonham.

OMAHA, NEB.

M. A. Free, John Rowe.

OWENSBORO, KY.

J. S. Patterson.

OHIO STATE ASSOCIATION (STATE).

E. A. Futrer, Columbus; Louis
Populowsky, Cleveland; A. G. Miller,
Marion.

PASSAIC COUNTY ASSOCIATION, NEW
JERSEY.

James Kearney, James T. McNab,
Charles Walls, John Hickman.

PEORIA, ILL.

W. W. Murphy, Chas. W. O'Neill,
E. H. Donahoe.

PITTSBURGH, PA.

C. H. Humbert, J. L. McShane,
Joseph A. Weldon, J. J. Kennedy, F.
P. Blythe, Jas. Hay, R. J. Bradshaw.

PROVIDENCE, R. I.

Patrick Tierney, Frederic G. Lees,
Christopher P. Brennan, William F.
Congdon, James B. Manchester, John
J. Suanley.

PLAINFIELD, N. J.

John H. Carney, D. W. Littell.

PORTLAND, ORE.

L. H. Bddemer, A. Muirhead,
Robert Brady, Wm. Eccles.

PHILADELPHIA, PA.

John E. Evanson, William H. Doyle,
George F. Uber, A. M. Hicks, John
Gormly, Wm. Harkness, Wm. S. Clark,
S. W. Barnes, Wm. McCoach, F. P.
Brown, J. S. Penneck.

POUGHKEEPSIE, N. Y.

P. C. Doherty, H. J. Maar.

RACINE, WIS.

H. Morris, H. Raymond.

ROCKFORD, ILL.

E. S. Gregory, Wm. H. Durham.

RHODE ISLAND ASSOCIATION (STATE).

James C. Conroy, Providence.

ROCHESTER, N. Y.

Geo. E. Bodds, Jos. A. Barr, Wm. G.
Reed, Jno. A. Creelman.

SCRANTON, PA.

James P. Doyle, H. J. Gunster, J. J.
Schneider, J. J. Gorman.

ST. PAUL, MINN.

M. J. O'Neill, J. P. Adamson, Geo.
A. Kees.

ST. LOUIS, MO.

John McMahon, Jeremiah Sheehan,
J. M. Life, John Lyons, P. H. Calla-
han, Wm. Kuhns, Werner Hencke,
Jno. P. Kelleher, Edward Schuster,
Wm. Schwehr, Jr.; M. J. Ward, John
Quinn Thos. Tuffy, A. T. Bond, Ed-
ward P. Finnegan, Theo. Bonroe, Thos.
Delaney, Jas. T. Walsh, Otto Deitz, N.
Sibel, Jr., Jacob Gleason, August
Heil.

SAGINAW, MICH.

B. F. Courtright, Geo. Bridgeman,
R. Weston.

SYRACUSE, N. Y.

F. W. Waggoner, C. G. Himchett.

SAN FRANCISCO, CAL.

John L. E. Firmin, James E. Britt,
Henry Hufschmidt, Charles Meehan,
Garrett E. Sweeney, William D. Hobes,
Henry Ickleheimer, Chas. J. Reiley.

TEXAS ASSOCIATION (STATE).

D. F. Sullivan, Dallas; D. J. May,
Galveston; Paul Shean, Galveston;
A. H. Shafer, San Antonio; J. M.
Shumate.

TOLEDO, OHIO.

Jas. W. Gould, Robert Raitz, Wm.
G. Wacker.

TROY, N. Y.

Wm. H. Barnes, Wm. Ferguson,
Henry Calhoun, Chas. Wills, James
Temple.

WASHINGTON, D. C.

James Nolan, Edward J. Hannan,
William Koch, Joseph R. Quinter,
James Cunningham, James Ragan.

WILMINGTON, DEL.

Alfred Gawthrop, John Greenlee,
James F. Traynor, I. N. Eaton.

WISCONSIN ASSOCIATION (STATE).

P. H. Ryan, Appleton; Geo. B.
McCall, Chippewa Falls; J. P. Fox,

Eau Claire; W. S. Patterson, Appleton.

WORCESTER, MASS.

J. W. Gordan, Jno. F. Deedy, O. S. Kendall, A. A. McLaughlin, J. C. Luby.

YONKERS, N. Y.

P. J. Donohue, P. H. Lennehan.

In connection with the report of the Committee on Credentials Chairman Davlin read a letter received from the president and secretary of the Master Plumbers' Association of Montreal, embodying a copy of a resolution passed by that organization on the 6th inst. appointing John Date, the association's first vice-president, a delegate to represent it at the convention of the National Association of Master Plumbers, at Philadelphia, and requesting that he be allowed such privileges as could be permitted.

Upon motion the representation was accorded and Mr. Date was introduced to the meeting amid applause. Mr. Date suitably acknowledged the courtesy and expressed a hope that the growing interest as regards organization among Canadian plumbers would lead to an affiliation of their associations with the National Association of the United States. As a plumber of 50 years' experience he appreciated the mutual benefit to be derived from such a course.

After roll call W. H. Doyle moved that a Committee on Resolutions, consisting of five delegates, be appointed. The motion being carried the president appointed:

Wm. H. Doyle.
E. J. Hannan.
P. J. Kelliher.
S. E. Dibble.
T. C. Boyne.

The committee appointed at the last convention to report on the proposed revision of the constitution made a report through its chairman, Edwin Hayward of Brooklyn. The report appeared to go somewhat further into the subject than was contemplated at the Detroit Convention, and recommended amendments throughout the constitution which the president decided could not be considered by the association at this convention. After an extended discussion, during which the features of the situation were viewed from all points and many motions for disposal of the question were made, the report was finally, on motion of D. M. Quay, referred back to the committee, with instructions that they make a report on the lines laid down at the Detroit Convention.

John L. E. Firmin of San Francisco, chairman of the Sanitary Committee, presented the following report of his committee:

Report of Sanitary Committee.

Your committee herewith most respectfully beg to submit their report. Glancing over past labors of this committee it might seem a fruitless and idle talk to further cultivate the field of sanitation; it would appear that so tillied and subsoiled has the land become and so many crops have been gathered as to make it promise but

poor reward for further labor. Such a conclusion, however, we think erroneous. The truth ever remains the truth—principles never change. Nature will revert to first principles; so long as we remain in the van of civilization so long shall we discover the truth and proper methods of the application of principles, and so long shall it remain our duty to teach the principles of these truths to our less enlightened fellow men. In one respect we are of the opinion that this committee is inappropriately named, for it is not alone a sanitary—i. e., "a preservation of health"—but more a sanitary—i. e., "a conducive to health"—committee to the full extent and meaning of those terms.

In reviewing labor performed our object is to offer records—vouchers, as it were—as proof of our worthiness and sincerity. Our constitution affirms that "this association is organized for sanitary purposes." That this is not an empty assertion, we would refer to the fact that prior to our organization there was no through-out the whole United States not one town or city which had any form of law governing the business of plumbing. There was not a single instance of that class of legislation, except such as appertained to blind cesspools and ordinances bearing upon the tapping of water mains, &c. These comprised all that we now term "Sanitary Plumbing Laws."

Statistics informed us that we suffered from a fearful percentage of preventable diseases and that the span of life was of an abnormally contracted radius; that the sacrifice of children was such that the mere relation of facts made the Christian heart bleed; worse still, we looked upon these conditions as normal, as natural adjuncts of civilization. He who doubted you was referred to the plagues of the past and was told that they were the inevitable accompaniments of civilization. As London in the past had her plagues, so must London have them now and in the future. That as cholera seemed to belong to the pilgrims of Mecca, as part of their devotions to Mohammed, therefore all the currents of commerce must be contaminated and society suffer. All of these inflections science has proved to be not necessary adjuncts to civilization, and that these calamities which we had brought upon ourselves and believed to be the acts of Providence really were born of a defiance of one of the first tenets of godliness—cleanliness. Rome with all her beauties, charms, cultivation, sanitarians still called the "sink of nations." This title she earned from her utter disregard and defiance of sanitary and sanitary principles. We have recited the utter lack of sanitary laws as we found at the time of our organization. Now note the change. The necessary preliminaries performed, immediately throughout the entire country the Master Plumbers' Association, by various honorable, just and enlightened efforts—efforts exerted, too, under the most trying conditions of ridicule, sarcasm, ignorance and narrowmindedness—obtained what are now generally termed "plumbing laws," or "Rules and Regulations of Plumbing and Drainage." To such an extent did our labors ramify that at this writing there is no city or town, and hardly a hamlet, which is not in a greater or lesser degree controlled and benefited by our labors. In bringing to your attention what has been accomplished our aim is not self laudation or a desire to speak of the work as accomplished and complete. Isaac Newton, when complimented upon his great knowledge, replied "he had but lived long enough to discover he knew nothing." We have progressed far enough

to discover that our field of labor opens out before us as a plain reaching far beyond our horizon. At this point we believe it our duty to lend all our weight as a great association to the ends of introducing and perfecting our plumbing laws. We would advise that each association give their most earnest attention to the selection of the timber forming their various sanitary committees. We also point out the importance of our Committee on Legislation. Long since we discovered that without the necessary legislative feature, practical application has been impossible or nearly so. Upon every favorable opportunity endeavor to disabuse the public of the idea that our legislative labors are selfish.

In the nature of things it is impossible to form laws which would be equally appropriate to all sections of our country. That which would be best suited to the needs of Michigan would prove most faulty for Louisiana. A system approaching perfection as applied to California would be ridiculous as applied to Maine. And right here is just where our association is doing a work grand in its results, which should call forth the admiration of all advanced minds, and that is that our local associations are in their nature, by education and training, boards of expert sanitarians, who are ever searching for, discovering and applying improved methods of sanitation which are most suitable and practicable, each to his individual requirements of locality. A feature which we think should receive our special attention is the endeavoring, by all honorable means, to have representative master plumbers act as members of boards of health. This advance step has been partially inaugurated. In view of a singular apathy and professional ethical opposition we may expect rebuff and unfriendliness. But we in the past have met and conquered that, and knowing we are right and while ready freely to grant to the professional man his proper territory we at the same time must demand the recognition of the fact that in the field of practical sanitation we alone are competent, by the fact of technical education and training.

We also bring to your immediate attention a danger which while not new, yet has been born during the past few years. This danger is at once serious to the public and ourselves as business men, in so much as that out of a feeling of security insecurity has been given birth. Out of a too implicit reliance in the plumbing laws upon the part of the public has arisen and grown a series of dangers from both mechanical and scientific ignorance and the dishonest execution of supposed legal requirements. There has arisen a belief that now it is not necessary to use care in the choice of your plumber, since he is by law compelled to comply with modern sanitary principles and mechanical arrangements. Never was a greater error committed by the public. These facts we are satisfied you long since discovered and as readily saw their far-reaching results for evil. We touch upon this feature solely with a view to strengthen and renew your efforts looking to an enlightened understanding upon the part of your patrons.

We, as a committee, consider it our duty to take up practical ends as well as theoretical, and in this connection would advise steps be taken looking toward a more thorough and general system of State organization. In this connection we would recommend that in the initial labors the national body assume at least a portion of the expense of organization as a sanitary committee. We take this view from the fact that without State organization it is in many States practically

impossible to have State sanitary legislation. It would be but just to our allies, show a wise conception of our own interests, as well as performing a duty to civilization, to here emphasize the immeasurable importance of the sanitary press. It would seem at this stage of man's progress to require no words upon our part to demonstrate the weight of the press. Our calling has been to a great degree fortunate in being represented by a technical press which for intellectual acumen and moral responsibility and sincerity, coupled with "go ahead" vim and perseverance, has few peers. In the press we have a medium ever ready to hear us, speak for us, fight for us; and, what is more, it sows the seeds of wisdom throughout all the highways and byways of the land. These things it does in a manner at once educatingly and entertainingly and to a degree that without such means we might never have hoped for; and so we would say—encourage, advise, give information and support to the sanitary press of the country.

One of nature's laws is that of decay. Upon the completion of a piece of plumbing and the granting of a certificate the majority of our patrons imagine all responsibility upon their part ceases. Now, while modern plumbing is so arranged that when well done the running expenses are but very light indeed, still, no matter how thorough and complete the time of completion, nature, assisted by use, abuse and neglect, will render that which was practically perfect most imperfect; therefore we would remind you of the very great importance of legislative action looking to and providing for periodical expert examination of sanitary appliances, more particularly of those premises controlled by municipalities, corporations, school boards, asylums, prisons, tenements, ships, &c., as we know by experience that this class of habitation is most liable to run into default.

We have thought it proper to call your attention to another source of danger—that is, alteration work and certain classes of jobbing. We all of us have experienced that "sickening sensation" where after using every care and applying our best efforts in bringing to completion a piece of plumbing, making it as nearly perfect as we are capable of, we shortly after found it ruined by some botch fitting up a closet, basin, sink, cesspool or rain conductor in utter violation of all sanitary principles; in fact, thus practically rendering all work which had been properly done nugatory. This evil we think could and should be regulated by proper legislation.

We should never lose sight of the fact that, as a whole, the strongest part of a system of plumbing is that which is most defective. Be it large or small building the principle remains good. Without the slightest desire to encroach upon the field of others, we think it our duty to point to the need of regulation by law of the distribution of light, sun and air and the limitation of height of buildings, no matter what fancied necessities selfishness may create. The laws are still very defective and too often more, imperfectly enforced in regard to providing proper conditions for sleeping rooms and the general planning of cellars, basements, sub-cellars, areas, &c. We, as a whole, are very far from having arrived at even a modest degree of perfection in this respect. There are numbers of buildings which stand in need of condemnation as unfit for human habitation. We would be lacking in our duty did we fail to enter our protest against what appears an alarming increase of shoddy plumbing goods. The market is flooded with inferior material. No sooner is a good article produced than immediately a

counterfeit appears, inferior but cheaper, until we have arrived where we might liken it to where

The little fleas that tease and bite us
Have lesser fleas to bite 'em,
And these lesser fleas have lesser fleas,
And so ad infinitum.

Seriously, we should cry, "Halt!" To continue as we are we ultimately will gain nothing; on the other hand, have everything to lose. We must keep faith with the producer of the good article, eschewing the inferior even if offering an immediate greater profit; otherwise the whole fabric of modern house plumbing must crumble by the mere fact of shoddy manufactured materials. We are compelled to give a certain guarantee; we must exact similar guarantees. In the United States there seems to be an ill devised system of statistics—ill devised as it is, more illy applied is it; to such a degree is this the fact that even in the case of some of our metropolises that data upon which we should base our calculations are found so very defective that, in fact, they are worse than no data at all, since they would lead us to utterly erroneous conclusions. When we consider that scientific statistics are the fundamental basis of all sanitary deductions it will readily appear how very important is this feature of sanitary legislation. In a paper of this nature it is impossible to more than hint at the needs of the hour, presenting a general outline of future operation. This is all we have attempted; the more laborious duties of solidifying this perspective we leave, gentlemen, with you. Thanking you for your kind consideration, we are,
Yours,

JOHN L. E. FIRMIN, Chairman,
JOHN B. BUTTERWORTH,
JAMES MCGIVNEY,
JOHN CRIMMINS,
L. SCHOLES.

On motion of E. J. Hannan the paper was ordered to be printed and copies distributed among the members of the association and a copy sent to every municipality in the country.

J. J. Wade of Chicago then moved that the president be authorized to telegraph to the Central Supply Association, then meeting in Detroit, the congratulations of this association upon its organization, with best wishes for its success. The motion was carried.

The following amendments to articles 2 and 3 of the by-laws of the association were recommended by the Executive Committee and, upon motions, adopted:

ARTICLE 2. That the bond of the financial and recording secretary be increased to a sum not less than \$2000, as in the discretion of the Executive Committee may seem best, and that the surety be in a responsible guarantee company, and the fee for same be paid out of the national treasury.

ARTICLE 3. That the bond of the treasurer be increased to a sum not less than \$5000, as in the discretion of the Executive Committee may seem best, and that the surety be in a responsible guarantee company, and the fee for same be paid out of the national treasury.

An amendment to article 4 of the constitution, recommended by the New York State Association of Master Plumbers through its president, Wm. J. McDermott, was, after discussion and upon motion, referred to the Committee on Revision of the Constitution and By-Laws.

Other amendments to the constitution providing for the appointment of a national organizer and for the admission of plumbers doing business in the British Provinces were referred to the incoming Executive Committee.

Some resolutions recommended to the association for adoption by the recent Illinois State Association meeting at Rock Island having been referred to the Committee on Resolutions, the convention adjourned to meet again at 8 o'clock.

TUESDAY EVENING.

The convention was called to order at 8.30 o'clock and reports from the State vice-presidents were at once called for.

Iowa was the first to respond. For this State Henry Ewinger reported a satisfactory condition of affairs, many additions having been made to the list of organizations and amicable relations existing in all branches of the trade.

Simon Shulhafer, for the State of Kentucky, reported pleasant relations between the plumbers, journeymen and jobbers of the State.

Robert Loudon, for the State of Illinois, reported that in point of membership his State was the banner State of the National Association. Complete harmony existed in the organization and a good deal had been done toward securing good legislation in regard to sanitary matters.

Connecticut, through J. B. Weiant, reported amicable relations in its organization, with a satisfactory addition to its membership.

J. M. Life, for the State of Missouri, reported that the State carried 275 plumbers, of which number 228 were members of the association. Other details in the report, entailing discussion, the report was referred to the St. Louis delegation for further attention.

Massachusetts, through John F. Deedy, presented a lengthy report descriptive of the efforts made by its association to increase its strength and the difficulties it had surmounted. The organization was in good shape and doing good work.

Jas. H. O'Neill, for Nebraska, reported that the partial failure of the crops in 1892 and 1893, and the total failure of 1894, had naturally retarded the progress of the State organization. In the face of all discouragements, however, the association had extended its membership and had been able to devote much attention to legislation of matters of interest to the trade.

New Jersey made an excellent showing in the report handed in by John Hickman, and the effect of the work done by the association of this State was evidenced in the larger delegation sent to the convention this year.

Wisconsin was shown to be in a very flourishing condition by the report of W. H. Halsey.

J. B. Smith, reporting for Maine, instanced some successful work done during the year and showed good pros-

pects for a strong organization in the future.

Oregon, through L. H. Buddemer, reported improvement in the prospects for complete organization sufficient to render representation at the next convention probable.

A year's good work and complete harmony among the trade was the substance of Wm. T. McGarrin's report for the State of Michigan.

The report of the District of Columbia, presented by Daniel Hannan, referred to some effective work done in this section and an increase in the association's membership.

Delaware, through I. N. Eaton, reported satisfactory progress and pleasant relations in the trade.

Jas. F. P. Carey reported an increased membership and a satisfactory condition for the State of Maryland.

John L. E. Firmin, for Northern California, made by permission a verbal report for the vice-president of that State, from which it appeared that the State association was in progressive shape, and had then on file 42 new applications for membership.

The Committee on Essays, through its chairman, J. Sheehan, reported that the work assigned to it had been completed and the essays selected were ready for a reading. On motion the reading was dispensed with and the essays ordered to be printed in the proceedings of the convention.

Some proposed resolutions having been read and referred to the Committee on Resolutions the convention adjourned, to meet again on Wednesday morning at 9 o'clock.

WEDNESDAY MORNING.

It was nearly 10 o'clock when the president rapped for order. The first business was the reading of some resolutions recommended for adoption by the convention. These were referred to the Committee on Resolutions.

The Committee on Credentials reported the arrival since last report of the following delegates:

Iowa—G. T. Ahirns, Jas. Linane, Des Moines.

Pennsylvania, Northwestern Association—L. L. Lord.

Scranton, Pa.—J. J. Schneider, J. J. Gorman.

San Francisco—Jas. E. Britt, Henry Hufschmidt, Chas. Meehan, Garret E. Sweeney, Wm. D. Hotes, Henry Ickleheimer, C. J. Reiley.

Elmira, N. Y.—J. T. Sadler.

The report, on motion, was received and the delegates admitted to the convention.

The president's report was next read, as follows:

Report of President Mitchell.

In accordance with the custom of your president rendering an annual statement of the condition of the organization at the close of the association year for which he was elected, I have the pleasant honor of briefly reviewing the work of the year, not only that which I was delegated to perform, but a résumé of the work undertaken and accomplished by the various na-

tional officers. The report of the Executive Committee and the reports of the various State vice-presidents will review the situation more fully. I will also refrain from calling your attention to many matters which I deem inappropriate to lay before you in this report, but have thought it more fitting to leave for a future report, which will be presented to you at the proper time.

I have had many invitations to visit sections of the country, sometimes to give encouragement to old associations and at other times to infuse members of a new association with the right spirit toward one another, which is so necessary to the success of local associations. A few of the invitations I have accepted, but more have been declined, chiefly because I felt there were other national officers, located nearer the field of action, who could, in a pleasing and convincing way, impart to their fellow craftsmen the principles of associated endeavor. Where complaints have arisen requiring personal attention I have requested a member of the Executive Committee located nearest the scene of dispute to adjust the trouble, and in all cases honorable and satisfactory settlements have been reached. I have also been able to delegate some of the outside work to the executive clerk.

WORK FOR THE OFFICERS.

The year has been fraught with important events bearing upon our trade. Probably never before since our early history has there been so much need of united and wise action. By this I do not mean to be understood as entertaining fear for the future of our grand organization. It is past the experimental stage. Its past achievements and present strength are almost a guarantee for future continuance and success. But we need to be careful in our advance so that we will not have to undo some of our work. Especially do we need to be careful in our convention enthusiasm in passing resolutions which impose upon our officers considerable work, sometimes fraught with much difficulty. It is an easy matter to lay out a line of action, but quite another matter for your Executive Committee and president to carry it out. Some members seem to think there is nothing for them to do after the adjournment of the convention. The national officers are chosen to voice your sentiments and enforce your resolves, but without they have your united support they can do but little. My experience has been that some secretaries are too lax in attending to matters referred to them. Important matters have been delayed because the secretary has been communicated with when it was the rule in that association that the president should receive all letters, while it has been the reverse in other associations. Local associations seldom take the trouble to notify the national office of an election of new officers, and the only means of knowing is to watch the trade press. From lack of knowledge as to who the officers were your executive has communicated with the old officers several times and given offense to the new officers, and the latter have not been slow to remind him of the grievous mistake. I hope my successor will not be hindered in this manner.

SUPPLY TRADE ORGANIZATION.

Since we last met the supply trade has organized, and the Eastern Supply Association has informed us in unmistakable language of its motives, which are embodied in the following resolutions:

Resolved, That the members of this association will not hereafter consider individually any communications or complaints from local plumbers' organizations, relative

to trade arrangements or conditions, unless the same shall have first been submitted to the State Executive Committee of such master plumbers' organization, where such exist, and by them conveyed to the secretary of this body is hereby ordered to communicate with the Executive Committee of the trade associations with a view of devising means to facilitate the amicable and satisfactory adjustment of all complaints coming from members of either body.

In case a State or local association of master plumbers makes a demand upon any member of this association to confine its sales of plumbing goods in that State or locality to members of said master plumbers' association, such demand shall at once be referred by such member to the secretary of this association shall thereupon communicate in writing with the secretary of the master plumbers' association of said State or locality, informing him of the fact that the policy of this association is to adhere strictly to the Baltimore resolutions, and that the said Baltimore resolutions specifically state that licensed plumbers, regularly engaged in the plumbing business, and with an established place of business, are entitled to purchase plumbing goods, this association does not deem it wise or expedient to depart from this rule. In the event of failure to receive redress from the local association it shall be the duty of this association to again take up the matter and refer it to the secretary of the National Association and notify him that until such time as the boycott has been raised the operation of the Baltimore resolutions will cease.

The first resolution was offered and referred to the Executive Committee of the Eastern Supply Association at its first meeting, held in New York City, November 19, 1894. Soon after its passage I remarked through the trade press that I considered the resolution an unjustifiable interference with the rights of local associations and a detriment to the amicable and speedy adjustment of complaints.

The last resolution was unanimously adopted at the second meeting of the Eastern Supply Association, held in New York City on March 12, 1895. Through the trade press I made the following comment on the resolution:

The action of the Eastern Supply Association in the passage of this resolution meets my expectation of their organization, its objects and head officers. The plumbers of the country can expect little else. It is a direct blow to many of our local associations. Home rule, or local rights, are inalienable and the price of all local associations. The present peaceful relations are by this action endangered, but I am glad to say and feel that the master plumbers throughout the States, as now organized, are equal to the emergency. Our aims are just and tend toward harmony, and the plumbers and members of the National Association will defend the rights of locals in their efforts for a livelihood and in their desire to trade with manufacturers who pursue reasonable business methods in an honorable way, without regard to threats.

Some feel that the supply associations can be made beneficial to our members, while others hold different views. It now behooves us as worthy, independent master plumbers to think carefully before we act. Let us be unanimous in all our acts and then without a dissenting voice or act stand by whatever enactments are passed and the incoming officers, for they can do very little without the earnest support of the entire membership.

PRESENT STATUS OF PROTECTION.

We have been told that we have attained the standard of protection and beyond which it is unwise to go and that we should now turn our efforts in another channel. But I do not feel that our members think that complete protection has been accomplished. The majority of local associations throughout the country have been greatly benefited by local agreements with local supply houses. I do not believe that any one claims that such ar-

rangements have not been mutually beneficial. I believe local associations have the right to enter into local agreements with their supply houses when such agreements are in consonance with the spirit of the Baltimore resolutions; provided, however, that they have been approved by the National Executive Committee or convention. In this case I think they should receive the moral support of the National Association. The trouble is that with the exception of a few cases local agreements have not been submitted to the Executive Committee. The Baltimore resolutions have been and are to-day the solid foundation upon which we must build, but they have been lost sight of in many sections.

THE BALTIMORE RESOLUTIONS.

One year ago, when I assumed the office of president, there were not over 25 copies of the Baltimore resolutions bearing signatures on file. I was surprised to learn of this state of affairs. Early in my administration I had occasion to communicate with a firm relative to selling to a consumer. The name of the firm being on the little book, having been forwarded by the local secretary, I had reason to suppose the firm had signed the Baltimore resolutions, but later developments proved the firm had exceptions granted by the local association. This experience convinced me of the necessity of having on file the signatures of all firms in sympathy with the resolutions. I first asked the secretaries of local associations to forward the signed copies in their possession, stating that inasmuch as they were national in character they should be in possession of the National Association. Chicago responded with 29 signed copies. Milwaukee 8. Boston forwarded copy of resolutions, without the last two amendments, with 17 signatures. Detroit forwarded resolutions, amended by Michigan agreement, with 8 signatures. Philadelphia 10, with exceptions. San Francisco 13 signatures, with exceptions. Kansas City 3 signatures, last two amendments not included. Rochester 5 signatures, last two amendments not included. The absence of the last two amendments on many signed copies proves how lax some associations are in observing new amendments, also how much work and annoyance to signers annual amendments signify. Many of the associations reported that if the resolutions had ever been signed they were lost. After collecting what I could from local associations I wrote to every firm in the plumbing supply business whose signature I did not have, with the gratifying result that there are to-day in possession of the National Association 271 signatures to the Baltimore resolutions. I have no doubt they will be carefully preserved for future reference, as they will be of great value to future administrations. Some of the small firms have not replied to the invitation to approve the resolutions, while a few have refused. In one city where refusal was met with the local association was asked to assist, but said local association answered that the local agreement was of more benefit than the Baltimore resolutions.

I intended to publish a list of those who had signed the Baltimore resolutions, but complications arose and I deemed it best to delay the printing of the list until after this convention.

ORGANIZATION WORK.

During the year considerable money has been spent in organization work. I believe that all money expended to increase membership is well used. I will very briefly review some of the work of the various officers, the details of which will be given in their respective reports.

The Illinois Association has had the largest amount of money for organization purposes, and as the result of the energetic and thorough work of two self-sacrificing officers of the Illinois Association, John M. Simpson, president, and Jno. O'Neil, Jr., secretary, \$346 in national dues have been collected by them and forwarded to the national financial secretary. Last year there were only 30 affiliated members in Illinois outside of Chicago, and to-day there are 173, or an increase of 143 members. This does not include the North Shore Association, which disbanded and most of its members joined the Chicago Association.

Through the efforts of your national treasurer, the State vice-president of Wisconsin and the secretary of the North western Association of Wisconsin (W. S. Pattison) there is a good State association in Wisconsin and an increased membership in the State of 80 members.

The State vice-president of Maine, John B. Smith, assisted by Robert J. Donnelly of Portsmouth, N. H., organized three new local associations and a State association. The local associations are: Bangor and vicinity, Portland and vicinity, and Augusta and vicinity, and with the Lewiston association, organized last year by Mr. Smith, make a membership in Maine of 43.

James H. O'Neill of Lincoln, Neb., who for years has been struggling for a State association, has had his efforts crowned with success. Your national vice-president, L. B. Cross, assisted Mr. O'Neill at a meeting in Lincoln, on February 14 last, in forming a State association, which now has 34 members.

A State association has been formed in Florida with a charter membership of 18. Our Southern friends appear to be well organized, and judging from the correspondence and careful methods pursued in a case of dispute they mean advancement and protection.

J. A. Monagan of Eureka Springs, Ark., has met with very flattering success in his State. On October 16 last he called a meeting of the master plumbers of Arkansas at Little Rock, and as the result of his efforts a State association was formed with 33 members.

Learning that there was a large field for organization in the Eastern part of Pennsylvania and that the national State vice-president of Pennsylvania did not have the time to devote to the work I felt the field should not go uncultivated, especially as several had written for personal assistance. Jas. F. Traynor of Wilmington, Del., was in my office one day and I spoke to him about the situation and he offered to do anything in his power to advance the work. So I instructed him to go ahead and do the work, using his best judgment. John Trainor of Baltimore, Md., assisted Mr. Trainor in Harrisburg. As the result of Mr. Traynor's work associations were formed in the following places: Scranton, 21 members; Allentown, 19 members; Harrisburg, 15 members; Lancaster, 9 members; Chester, — members; Wilkes-Barre, 13 members. An association was formed in Easton with — members, and is the result of the missionary work of the Allentown association. Another new association in the Keystone State is Erie, which I understand was organized through its own efforts. The total increase in membership in Pennsylvania in new associations is 75.

The State vice-president of New Jersey, John Hickman, has labored hard and earnestly in his State, and had he not met with a painful accident which confined him to his bed and at a time when he was about to finish up the work begun he would have been

able to report most excellent success, but as it is he is able to make a much better report than many State officers who have had their health. Mr. Hickman has been very ably assisted by Alex. Don of Newark. Hardly a master plumber in the State of New Jersey has not received a personal call from one of these workers. Monmouth County (including Asbury Park, Red Bank, Long Branch, Ocean Grove and Sea Bright) was organized with 12 charter members. Plainfield with 11 members. Hudson County with 30. Several other cities have been visited, but on account of Mr. Hickman's illness the associations have not been organized.

The State vice-president of Oregon, L. H. Buddemer, has held a revival in his city, Portland, and reorganized the association. He has also engaged in some preliminary work outside his city, and requests that he be continued in office for another year so that he may complete the work begun.

The following is a list of the associations formed during the year and the number of members in each which have affiliated with the national association:

Northampton, Mass.	18
Monmouth County, N. J.	6
Harrisburg, Pa.	19
Scranton, Pa.	21
Wilkes-Barre, Pa.	13
Chester, Pa.	—
Erie, Pa.	11
Easton, Pa.	—
Lancaster, Pa.	9
Hudson County, N. J.	15
Yonkers, N. Y.	14
Omaha, Neb.	21
Lincoln, Neb.	6
Marquette, Mich.	4
Green Bay, Wis.	4
Janesville, Wis.	4
La Crosse, Wis.	4
Madison, Wis.	5
Bakersfield, Cal.	9
Bangor, Maine	4
Augusta, Maine	10
Portland, Maine	6
Plainfield, N. J.	11
Galesburg, Ill.	4
Aurora, Ill.	4
Bloomington, Ill.	6
Joliet, Ill.	5
Springfield, Ill.	8
Rock Island and Moline, Ill.	10
Elgin, Ill.	6
Danville, Ill.	5
Ottawa, Ill.	5
La Salle and Peru, Ill.	5
Jacksonville	4
Mendota, Ill.	4
La Grange, Ill.	4
Streator, Ill.	4
Waukegan, Ill.	4
Somerville, Mass.	14
Cambridge, Mass.	12
Minneapolis, Minn., reorganized	22
Portland, Ore., reorganized	28
Florida Association (State)	18
Arkansas Association (State)	35

New individual members.....137

WEAK ASSOCIATIONS.

In noting the increase of new associations I feel it my duty to call attention to the old associations, or those in existence but a year or so, and their dropping out. Whatever the cause of the defection may be it is a mystery. The usual replies to inquiries as to the cause are that meetings have not been held for one, two, three or more months, and that when meetings were held a quorum was not present. Further inquiries will elicit no more information than that the members will not work together. What means can be adopted to induce or make members work together is the question, and the member who solves it will render a valuable service. Reports of filial associations where all personal differences are cast aside and all united in the common cause, and what should be the most convincing, reports of better work and living prices, avail little in convincing such lukewarm supporters of organization that

success depends upon the honest efforts of all members and not upon one or two. During the year several associations that have dropped out have been helped by the National Association and yet they have not seen fit to support their benefactor in the work. There are several local associations in the State of New York that have been organized and reorganized and now want to be reorganized again. Sometimes associations will start out and make mistakes in their early existence and need to be put on the right track, but when they want a national organizer every year I fear they can never be of much benefit to themselves or a credit to the National Association. Surely the dropping off cannot be attributed to any lack of attention or protection at the hands of the executive officer or of the protection policy. No complaints are made but what receive the prompt and careful attention of the national officers. Associations that have violations of the Baltimore resolutions and will put the evidence in the hands of the National Association and will do its part will be satisfied with the results. The impression seems to prevail among some members that they only have to write in that Mr. Manufacturer has sold a bill of goods to a consumer. Let me say to all such that they have a duty to perform, and that if they will do their part the National Association can be of great benefit to them.

SANITARY LEGISLATION.

I have watched with much interest the laudable efforts in the various States in the furtherance of State legislation in the interest of sanitary plumbing and competency on the part of master and journeymen plumbers. New York has successfully passed through this work, and I know what opposition is to be encountered on the part of avaricious landlords, who have too little regard for the health of their tenants, as well as from a few master plumbers, who fear they do not know enough about plumbing to pass an examination as to their competency. I have called the attention of the National Legislative Committee to this question and I hope it has prepared a report, enumerating the laws sought to be enacted and their cardinal points. I believe such a report would be most interesting to us all. I sincerely regret that the efforts of my colleagues have not been as successful as desired. Where success has not crowned your efforts I trust hope has not fled, but that your temporary defeat, for it can be but temporary, will urge you onward to success.

VISITS OF THE EXECUTIVE OFFICERS.

During the year the executive officers have made the following visits on behalf of the National Association:

John Trainor of Baltimore visited Harrisburg, Pa., and assisted in the formation of the Harrisburg Association. He attended the State conventions of the Massachusetts and Rhode Island Associations. Also visited Philadelphia to adjust a complaint.

The Cincinnati Association desired the presence and advice of a national officer, and Mr. Dewstoe attended a meeting of their association.

The Cleveland association requested the attendance of a national officer at one of their meetings, and Mr. Meathe made them a visit.

Your national vice president visited Lincoln, Neb., and assisted in the formation of the Nebraska association.

Your national treasurer visited St. Paul and Minneapolis, Minn., to advise and encourage the associations there. He also visited several other places in his State.

During the year I have visited the

following places: Connecticut State Convention, at Waterbury; New York State Convention, at Troy; meetings for organization in Asbury Park and Elizabeth, N. J.; a meeting of the Newark Association; convention of the American Public Health Association in Montreal, Canada. Mr. Pattison accompanied me to the Newark meeting.

Mr. Crosby, the executive clerk, has visited the following cities in the interest of the association: Boston and Northampton, Mass.; Elizabeth, N. J.; Newark, N. J., four times; Paterson, N. J., twice; Waterbury, Conn.; Baltimore, Md.; Springfield, Mass.; Montreal, Canada.

This year the proceedings of the last convention were mailed direct to each member within seven weeks after the adjournment of the convention. I believe this the most satisfactory way of distributing the minutes of our conventions.

Extra copies of the essays of Mr. Sheehan and Mr. Dibble, on "Organization of master plumbers' associations and the proper limit of their actions," also copies of the constitution and by-laws, were printed at the time the proceedings were printed, and, by using the same type used for the proceedings, cost but a small sum. This extra printing was used in organization work.

The correspondence of the year has been in excess of that of previous years; 1735 letters have been sent out; 900 mimeograph circulars have been prepared and sent out.

THE PAST AND FUTURE.

The results of the past year have been briefly given to you. I must admit that the Baltimore resolutions, as modified and interpreted by the national Executive Committee at the meeting held in New York City, to be the platform for the future for all sections of the country, and one that will do the most good and unite the master plumbers and manufacturers for business success. This year make your platform a permanent one for the future, so that all may understand and live up to it honestly as a contract on both sides. As our association is conducted on the principle "the majority to rule," do at this convention what will best serve the many and be safe for the members of this association to pursue. The moderate, conservative course I urge upon you may not suit the radical members who would rather rule than serve, even at a cost of dismemberment and ruin. What is wanted is to enroll every master plumber doing business throughout this land and the adoption of a uniform platform that can be maintained by all and in all sections, which will give the officers the hearty support of all local associations and individuals. When complaints are made of any violations the same should be supported by facts and not hearsay assertions, which cause endless trouble and humiliation to the officers. Do your duty well and increased membership and influence will follow, and our grand National Association—the infant of 13 years ago and the pride of those who brought it into life—will continue to live and accomplish all that was expected by its most sanguine friends.

Let me counsel you all, from Maine to California and the Lakes to the Gulf, to be patient and finish your labors, all uniting in one great movement for the protection and future life of this gathering, the benefit of humanity, the saving of lives, maintaining the happiness of those left behind, giving all beautiful work, approving all good sanitary appliances that beautify the private and public buildings throughout this progressive country, as an example to the youth of our

country and encouragement to take up the many things by us undone. If you do but half your duty no member will have cause to regret his alliance, but will hail with pleasure the high honor of being allied to this grand National Association.

Let your annual conventions be conducted in a businesslike way, free from intemperance, show and disorderly display. Maintain ourselves locally and nationally as regards social pleasures at conventions, exempting the manufacturers from expense, providing ourselves with social enjoyment at our own expense, and as a matter of principle; if we are unable to entertain ourselves let us do without it until we are. Do this and we will command the respect which dignity and independence always insure to the individual and association alike.

On retiring from this great office I wish to publicly thank the members of the Executive Committee of the year, who so gallantly stood by me, and to whose energy is due this great gathering to day. I would be doing an injustice in closing without assigning to Mr. Crosby, the executive clerk of the association, great praise for faithfulness, energy and help during every day of my term.

On retiring I am, a believer in the maxim, rotation in office. New blood is the best to command and build up, without regard to any section. The officers should possess merit, honesty and general good financial standing, and thereby command respect from friends and foes.

The report was listened to with much interest, and at the conclusion of the reading John Trainor of Baltimore moved that the report be received and spread upon the minutes and that the recommendations mentioned in the same be referred to a special committee, with instructions to put them into shape for adoption by the association. The motion being carried, the president appointed the following committee:

John Trainor, Baltimore.

Robt. Griffiths, Chicago.

Isaac Riley, Boston.

John O'Neil, Jr., Peoria.

Saml. Malcolm, New York.

The president's report of his visit to Montreal last December as a delegate from the association to the convention of the American Public Health Association was then read and a motion by J. J. Wade carried that the report, with the papers referred to in the same, read at the convention and appended to the report, be printed in the proceedings of this convention.

J. L. McShane, as vice-president of the State of Pennsylvania, reported the formation of a number of new associations throughout the State. The State Association was in excellent shape and had been successful in obtaining the passage by the Legislature of some good sanitary measures.

W. J. McDermott satisfactorily accounted for the non-appearance of a report from the State of New York; and P. Tierney asked permission, which was granted, to present the report of the Rhode Island Association in executive session.

Geo. E. Howe, for Southern California, reported that his association was in a very thriving condition.

T. H. Radcliffe, chairman of the Apprenticeship Committee, stated that his committee had no report to make, the business of the committee having been undertaken by the Executive Committee.

W. H. Doyle, Philadelphia, then, on behalf of the Philadelphia delegation, in a neat speech, presented to the association a large national flag for display at convention headquarters or elsewhere. The flag was of large size and on its outer end bore the title of the association. President Mitchell, on behalf of the association, acknowledged the gift in suitable terms, and the convention showed its appreciation of the gift in rousing cheers.

The meeting then adjourned to meet on Thursday morning at 9 o'clock in executive session.

Immediately after adjournment the delegates repaired to the front of the theater, where they were photographed.

In the afternoon the delegates and ladies were taken by the members of the Philadelphia Master Plumbers' Association to the Race street wharf, where they embarked on the steamer "Channey Vibbard" for a trip to Cramp's Shipyard and to Lincoln Park on the Delaware, the programme including a banquet at the latter place.

THURSDAY.

The convention met at 10 o'clock in the morning in executive session, which was continued until 5:30 in the afternoon, when open session was declared. The Executive Committee's report was then read.

Report of the Executive Committee.

During the year your Executive Committee has held three meetings. The first meeting at St. Clair Springs, Mich., June 22, 1894, and the second meeting at 155 East Fifty-eighth street, New York City, on October 15 and 16, 1894, and the third meeting at the Continental Hotel, Philadelphia, Pa., June 10, 1895.

FIRST MEETING.

The first meeting, held at St. Clair Springs, was called to order by President John Mitchell, with the following members present: John Mitchell, New York City; L. B. Cross, Kansas City, Mo.; W. E. Goodman, Milwaukee, Wis.; Henry J. Pattison, New York City; Henry G. Gabay, New York City; John Turner, Baltimore, Md.; C. C. Dewstoe, Cleveland, Ohio; James Meathe, Detroit, Mich.; Dan J. Finnerty, Boston, Mass.; Paul Redieske, Chicago, Ill. The first business was the appointment of an Auditing Committee, composed, as is usual, of the president, vice-president and retiring president.

It was moved and seconded that the chair appoint the regular standing committees. The Printing Committee was appointed, consisting of the president and secretary. It was voted that the *per capita* tax should be \$2 per member, the call for the first 50 per cent, to be issued on November 1, 1894, and the second call on March 1, 1895. The misunderstanding between the Los Angeles Association and three supply houses of California, as presented by the Los Angeles delegation at the Detroit convention, was referred to the president, with instructions to take such proper and effectual action as he deemed wise. The

Baltimore resolutions signed by J. L. Mott Iron Works and Fred Ade & Co. were referred to the president and such immediate advisers as he deemed essential. It was voted that the salary of the executive clerk hereafter be \$20 per week. Meeting adjourned subject to the call of the chair.

SECOND MEETING.

The second meeting of the Executive Committee was held in New York City on October 15 and 16, 1894, with President Mitchell presiding and the following members present: John Mitchell, New York City; Henry J. Pattison, New York City; W. E. Goodman, Milwaukee, Wis.; John Trainor, Baltimore, Md.; Henry G. Gabay, New York City; James Meathe, Detroit, Mich.; Paul Redieske, Chicago, Ill.

The following members were absent: C. C. Dewstoe of Cleveland, Ohio; L. D. Cross, Kansas City, Mo.; D. D. Finnerty, Boston, Mass. After the reading and approval of the minutes of the previous meeting, telegrams were read from Messrs. Dewstoe and Cross expressing regret at not being able to be present on account of important business engagements.

The question of accepting the position taken by the J. L. Mott Iron Works and Fred. Ade & Co.—which was that, inasmuch as they have signed an agreement to the authorized representatives of the National Association, Daniel G. Finnerty, that the agreement, coupled with later correspondence and telegrams, reserved to them the right to sell plumbing material to the following in any city of the Union: State and county institutions, railroad companies, Sailors' Snug Harbor, water, gas and electric light companies for such goods as are necessary for their respective lines of business, departments of cities and counties, the United States Government, for the export trade—was carefully considered by the members of your committee present at the meeting, and it was unanimously voted that inasmuch as ex-President Finnerty had interpreted the exceptions to the Baltimore resolutions made for the State of New York to apply to every State in the Union, and had granted had them to firms in New York, that this Executive Committee adopt the said exceptions and grant them to all manufacturers and dealers throughout the United States who have or may hereafter sign the Baltimore resolutions. It was voted that a sub-committee of the Executive Committee be appointed to interpret the exceptions granted, correct errors and prepare amendments to the Baltimore resolutions, the amendments to be reported to the convention for approval. Messrs. Trainor, Meathe and Redieske were appointed as the committee.

The Committee on Interpretation reported the following exempt from the operation of the Baltimore resolutions, which were adopted unanimously by the Executive Committee: The United States Government, State, county and city institutions, Sailor's Snug Harbor, railroads, gas, water and electric light companies for such goods as are necessary for their respective lines of business. The above resolution to apply to every State in the Union.

The Committee on Interpretation reported the following amendments to the Baltimore resolutions: That the first, second and fourth "resolve" in the Baltimore resolutions be struck out, and in the place thereof the following inserted as the first resolve:

Resolved, That members of this association confine the purchase of plumbing material to manufacturers and wholesale dealers who sell goods to master plumbers only, as defined in these resolutions.

The president explained how a certain

supply firm had sold plumbing goods to a railroad company, and that the goods were for private use, and further, that the firm complained of took the stand that they had a right under the Baltimore resolutions, with exceptions granted them, to sell to railroad companies regardless of where the goods were to be used. The president read a letter sent to the firm in question stating that such action was contrary to the spirit of the resolutions, and that while the railroad companies had been exempted it was very unfair for it to sell the goods to employees, and it was hoped that the countenancing by the supply firm of such action on the part of the railroad company would not continue.

President Mitchell explained that he and the executive clerk had called on Mr. Colgate of the National Lead Company of New York City relative to securing the signature of said firm to the Baltimore resolutions, and that Mr. Colgate said that his firm was in full sympathy with the resolutions, but was not in a position to sign them, and hoped that the association would consider him as working under the Baltimore resolutions. The Executive Committee voted that as long as the firm lived up to the Baltimore resolutions no action should be taken.

A communication was read from the Central Supply Association to the effect that the Central Supply Association would be pleased to confer with the National Association of Master Plumbers upon any question of interest to the trade. The president was instructed to thank the Central Supply Association for its offer of conference, but that at present the National Association of Master Plumbers has no questions to confer upon.

A letter was read from the State vice-president of Illinois, Robert London, asking for \$200 or \$250 for organization work in the State. Mr. Mitchell explained that Mr. O'Neil, secretary of the Illinois association, had been allowed \$136, the amount of *per capita* tax then collected by the Illinois association, for the use of himself and Mr. London in further organization work. The committee approved Mr. Mitchell's course.

Mr. Mitchell explained how essential it was that all copies of the Baltimore resolutions, bearing the signatures of those approving them, should be on file in the national executive office for reference, inasmuch as the resolutions were national in character. The Executive Committee approved of this course as most wise, and recommended that the president collect all copies bearing signatures.

It was moved by Mr. Goodman and seconded by Mr. Redieske, that the Executive Committee recommend to this convention that the bond of the national treasurer be increased to a sum not less than \$5000, as in the discretion of the Executive Committee it might seem best, and that the surety be in a responsible guarantee company, and the fee for same be paid out of the treasury of the National Association; also, that the bond of the financial and recording secretary be increased to a sum not less than \$2000 as in the discretion of the Executive Committee might seem best, and that the surety be in a responsible guarantee company, and that the fee for same be paid out of the treasury of the National Association. The motion was unanimously adopted.

Relative to paying bills incurred by the Special Committee on Revision of Constitution and By-Laws, appointed by the last convention, President Mitchell stated that he had personally advised Edw. Hayward, chairman of the committee, that he did not think it was the sense of the convention that it was necessary to call a special meeting of

the committee for the special purpose of considering proposed amendments, until a few days before the Philadelphia convention; and furthermore, that he did not consider he had the power from the convention to pay the bills likely to be incurred by such meeting, and that if any expenses were incurred the committee would have to appeal to the Philadelphia convention for the payment of their bills; and that notwithstanding these facts, Mr. Hayward called a meeting of the committee in Philadelphia on Sept. 2, and had sent bills aggregating \$121, and that he understood another meeting would be called for the same purpose. It was moved by the committee that the bills be referred to this convention for payment.

The president and secretary were instructed to act as a committee and consult with the Philadelphia Association relative to preparations for this convention. The second Tuesday in June was designated as the day for the opening of the convention, but that if the Philadelphia Association desired it could be changed to the third Tuesday. The president and secretary were also designated as a committee on transportation to secure reduced rates to this convention, also to select and secure badges for delegates. It was also thought advisable to issue tickets of admission to be issued only to delegates, in order that only delegates should have admission to the convention floor.

It was unanimously voted that the recommendation contained in the report of the state vice-president of Rhode Island, to provide for the appointment of a national organizer, be non-concurred in, because the president had the right to appoint any member of the National Association to organize in any section. The non-compliance with the Baltimore resolutions on the part of Chambers & Inslee of Newark, N. J., reported by a member from Bethlehem, Pa., was considered and the president instructed to write to the Newark firm and also the Newark Association, which the president did. The firm has since signed the Baltimore resolutions.

The assistance asked for by the Kansas Association at the last convention was considered and the president instructed with full power to act with the Kansas Association in carrying out the spirit of the Baltimore resolutions. The Kansas Association was communicated with, but no line of action was suggested.

President Mitchell explained that the Texas Association did not desire the membership of a certain land booming concern which claimed to be in the plumbing business, and that a certain manufacturer claimed that the firm was in the plumbing business and should be admitted to membership. That he had received a call from the manager of the supply firm, and that the manager agreed to abide by the decision or opinion of your president as to the fitness of this so-called plumbing firm for membership in the Texas Association. President Mitchell rendered his opinion that the Texas Association had a perfect right to sit in judgment upon the qualifications of the candidates for membership. This opinion being sent to the supply firm in question, was acknowledged and agreed to, which settled the matter.

In relation to the statement of John Crimins of Los Angeles and John L. E. Firmin of San Francisco that certain supply houses in California were conducting a plumbing supply business and a plumbing business, it was thought advisable to recommend to the convention as the sense of the committee that supply houses doing a plumbing supply business and contracting for plumbing work should be

considered unjust competitors. The president outlined the pernicious effects of members of the association selling plumbing material where they did not do the work, and it was moved by Mr. Trainor and seconded by Mr. Redieske, and adopted as the sense of the committee, that a member of the National Association should not sell material to parties excepting to those who had a right under the Baltimore resolutions to purchase same, and that the committee recommend to this convention an amendment to the Baltimore resolutions covering this point. The motion was adopted unanimously.

Mr. Trainor stated that the Baltimore delegation at the Detroit Convention was instructed to present the name of the supply firm of Baltimore that would not sign the Baltimore resolutions, but that owing to other business it was crowded out; also that a Boston firm were selling plumbing material to non-licensed plumbers in Baltimore, in violation of the Baltimore resolutions. It was the sense of the committee that the president should write to the Boston firm that their goods were being disposed of to others than licensed plumbers. The president corresponded with the firm in question, also the Boston association, and the matter was amicably adjusted.

Mr. J. Leland Wells, chairman of the Executive Committee of the Master Steam and Hot Water Fitters' Association, and P. G. Monroe, clerk of same association, appeared before your committee to urge the co-operation of the National Association of Master plumbers in matters pertaining to the protection of both trades, principally to influence manufacturers and dealers in plumbers' steam and hot water fitters' supplies to confine their sales to those regularly engaged in the business.

Mr. Wells said that his association would exert its influence to induce manufacturers of plumbing goods to deal with plumbers only, if the Master Plumbers' Association would exert a like influence with firms dealing in their line of goods. Mr. Wells said that in the case of iron pipe and fittings his association could afford protection. Mr. Wells thought by a joint committee of the two associations that considerable mutual good would result. After considering the proposition stated by Mr. Wells it was the sense of your committee that at present co-operation with the Master Steam and Hot Water Fitters in the manner desired was not prudent, and that it was best to refer the letter to this convention for careful consideration. It was moved by Mr. Meathe and seconded by Mr. Trainor that the president publish through the medium of the trade press in the form of an interview for the benefit of manufacturers and dealers, that inasmuch as the National Association was a business association, convened for business at annual conventions and not for a frolic, that the presence of agents for manufacturers and jobbers who apparently attended the convention for the purpose of a frolic was distasteful to the National Association and conveyed to the public a wrong idea of the association. The motion was adopted unanimously.

President Mitchell explained that, in compliance with a resolution passed by the last convention providing for the appointment of a committee to confer with the United Association of Journeymen Plumbers on the question of apprenticeship and to formulate some rules on the subject to recommend to the Philadelphia convention, he had notified the United Association of Journeymen Plumbers. The following gentlemen appeared before the Executive Committee in behalf of their associa-

tions: J. H. Connolly, chairman, Worcester, Mass.; W. J. Spencer, Buffalo, N. Y.; N. J. Driscoll, Brooklyn, N. Y.

After discussing the matter in joint conference, the following proposed rules were unanimously approved, to recommend to this convention.

SECTION I.—Any person desiring to learn the trade shall not be under 16 years of age, shall be of good moral character, able to read and write, and understand the rudiments of arithmetic, and must serve a term of five years, of which three should be served in the capacity of helper, the remaining two years to be employed at the discretion of the employer.

SEC. II.—That any person so apprenticed shall be properly indentured.

SEC. III.—Apprentices taken upon the conditions herein named shall be allowed six months probation, to properly determine the merits or qualifications of apprentices, which shall be allowed; the apprentice term provided said apprentice is accepted at the expiration of said period of probation; and further provided that the conditions named in Section II have been complied with.

SEC. IV.—Two apprentices shall be allowed to every four journeymen or fractional part thereof. In shops where they have only one apprentice, an additional apprentice will be allowed at the end of each year.

SEC. V.—All journeymen shall use their best endeavors to properly instruct apprentices in the art or knowledge of the trade.

SEC. VI.—Since the employment of the apprentice depends largely upon the journeyman, he, the journeyman, shall be consulted as to the merits or qualifications of said apprentice at the expiration of the probation period.

SEC. VII.—Detractions from conditions herein named shall only be made by reference of the entire controversy to the National Apprenticeship Committee, which shall consist of the Executive Committee of both the National Associations.

THIRD MEETING.

The third meeting of your Executive Committee was held at the Continental Hotel, at Philadelphia, Pa., June 10, 1895. Meeting called to order by President Mitchell with the following members present: John Mitchell, New York City; L. B. Cross, Henry J. Pattison, W. B. Goodman, Daniel G. Finerty, Paul Redieske, C. C. Dewstoe, Henry G. Gabay, James Meathe, John Trainor.

The secretary read the minutes, which were objected to by Mr. Finerty, who claimed that there was an error in that part of the proceedings where it referred to the granting of exceptions to J. L. Mott Iron Works and Fred. Adee by him. Mr. Finerty claimed that the exceptions were granted by the Executive Committee, and for the whole United States. The members of your committee, with the exception of Mr. Finerty, claimed that the exceptions when first proposed were understood by them, according to the wording of the documents signed by the two firms, to be only for the State of New York. Correspondence from the members of the Executive Committee to Mr. Finerty, also the correspondence between Mr. Finerty and the two firms, were read, which proved conclusively that at first Mr. Finerty evidently considered the exceptions were only for the State of New York, but later telegraphed to the two firms that the exceptions were for every State in the Union. The minutes as read by the secretary, which stated that the exceptions for the whole United States were granted by Mr. Finerty, were approved. President Mitchell read a letter from the Standard Mfg. Company of Pittsburgh in which said firm objected to putting on the list of manufacturers and jobbers in accord with the Baltimore resolutions the names of agents, for the reason that said agents were not considered jobbers of plumbing supplies. Presi-

dent Mitchell replied to the Standard Mfg. Company that in his opinion an agent residing in Pittsburgh or in any other city who sold plumbing material, though he did not carry perhaps a large stock, and might be merely an agent for some manufacturer, was entitled to a place on the list, for the reason that the said agent, if he did not sign the resolutions, could sell plumbing material to consumers, to the injury and detriment of the master plumber, and an injustice to the manufacturer, who perhaps had refused to sell to a consumer. The Standard Mfg. Company expressed a desire to write further on the subject, for the consideration of the committee, but no reply has been received.

A communication was received from the Monitor Iron Works of New York calling attention to prison made plumbing goods and urging the association to take some action disapproving prison made goods. It was moved by the Executive Committee to recommend that the National Association condemn all prison made goods. It was unanimously voted to appropriate \$500 to offer the Philadelphia Association for use toward defraying the expenses of the convention, such as hall, &c.

It was the sense of the committee that it recommend to the convention that members of the National Association would sell no plumbing goods to consumers other than those that they or their workmen put in.

At the conclusion of the reading the report was, on motion, received and adopted, with the exception of the portion covering the apprenticeship question.

During the reading of the report a committee from the convention of the Master Steam and Hot Water Fitters, composed of C. J. Gillis and J. W. Mills, appeared on the floor and tendered greetings and good wishes from their convention then in session. The committee were enthusiastically received and departed amid applause.

C. J. Prescott, vice-president of the Kansas State Association, reported a satisfactory state of affairs in his association and that it could be depended upon to support all measures tending to promote the trade.

Florida, through its delegate, reported that its State Association had only been formed within the last twelve months and rejoiced in 19 members, the State's complement of plumbers, all of whom were working in harmony.

E. J. Hannan then made a motion, which was carried, that the report of the Committee of the Whole, presented in executive session, be adopted.

W. G. Hayward of Brooklyn, Chairman of the Committee on Revision of the Constitution and By-laws, then read the amendments to the constitution and by-laws recommended by his committee on the lines laid down at the Detroit Convention. After a lively discussion, during which many motions were made, the matter was, on motion of Wm. McCoach, indefinitely postponed, a division being taken resulting in a vote of 145 to 59 in favor of postponement.

On motion, the Committee on Resolutions were then ordered to report, and the following resolutions passed:

A resolution expressing the desire of the members of the association that all

manufacturers of ball and basin cocks supply the same having standard iron pipe threads to the supply connections.

A resolution that a master plumber performing work in other jurisdictions than his own must be governed by the rules of the association covering such district.

A resolution recommending the aid of the associations represented at the convention to support the Washington, D. C., master plumbers in their efforts to obtain the passage of a bill requiring that the plumbing inspector of their city be a master plumber. The resolution also directed that a copy of the resolution in full be presented and distributed to all members of the association.

A resolution ordering the expenses incurred by local associations in entertaining the National Association to be paid out of the national treasury, such expenses not to exceed a sum set apart by the National Executive Committee.

A resolution that the association request his Excellency the Governor of Pennsylvania to sign House Bill No. 23, authorizing the regulation of house drainage, the construction of cesspools and the registration of journeymen and master plumbers; also the act for providing for the establishment of a Bureau or Division of Plumbing and House Drainage on the Departments of Health in cities of the second class of the Commonwealth of Pennsylvania.

A resolution recommending members of the association to insist that they be paid by manufacturers or jobbers for removing or replacing any article or fitting found defective after water has been turned on.

The convention then took a recess until 8 o'clock.

THURSDAY EVENING

The convention was not called to order until 8:45 o'clock. The first business was the reading of the financial secretary's report. Upon conclusion of the reading the report was, on motion, referred to the Auditing Committee.

W. J. McDermott of New York moved that the proposed resolution amending Article 4 of the constitution, referred to the Committee on Revision of Constitution and By-Laws, be reported on by that committee, and the motion was carried.

W. G. Hayward, as chairman of the committee, stated that the report was covered by the resolution passed at the afternoon session postponing indefinitely the contemplated revision.

Mr. McDermott claimed that the resolution referred to, which was that "all local associations and individual members must be affiliated with their respective State associations, where such exist, in order that they be recognized by the National Association," was separate and distinct from the resolutions previously acted upon.

The point taken being sustained, considerable discussion took place, the resolution finally being placed before the meeting as a motion by Mr. Mc-

Dermott, made in the manner prescribed by the constitution, and voted on. The result of the vote being doubtful, a division was called for, resulting in the adoption of the resolution by a vote of 194 to 75.

The following resolution was presented by the Committee on Resolutions, and on motion carried:

Whereas, Considerable of the plumbers' earthenware now in the market is of very inferior quality and crazes in a very short time, the connections as now made being very poorly constructed and very often falling to pieces after being set in place, thereby causing plumbers considerable annoyance and expense; therefore be it

Resolved, That the National Association of Master Plumbers do hereby request that all manufacturers of earthenware do place their name upon their goods and guarantee the same, and that it is the sense of this association that plumbers will not use any earthenware not so stamped and guaranteed.

C. Sullivan of Newark, N. J., then offered the following resolution, which was carried:

Resolved, That this convention authorize its Executive Committee to act with the Executive Committee of the National Master Steam and Hot Water Fitters' Association for mutual protection to the trade when it is found that the Baltimore resolutions or the "Trade resolutions" have been violated by manufacturers who have signed either of the above resolutions.

The treasurer, W. E. Goodman, then made his report, which showed that the total receipts during the year were \$11,125, and the expenditures \$4827, leaving a balance in hand of \$6298. The report was referred to the Audit Committee, who afterward reported it correct.

P. M. Murphy then moved that in view of the liberal treatment received at the hands of the Philadelphia local association, and the large amount in the treasury, a further sum of \$500 be voted them toward expenses.

Jere. Sheehan moved, as a substitute for the motion, that the matter be referred to the Executive Committee. The substitute was carried.

Election of officers for the ensuing year being then in order, the president called for nominations, and appointed as tellers Jas. Gilroy of New York, P. A. Sullivan of Baltimore, and John O'Neill of Illinois.

Candidates for president were nominated as follows: W. H. Doyle of Philadelphia, by John L. E. Firmin, and James Meathe of Detroit, by C. C. Dewstoe. The qualifications of each candidate were set forth in an eloquent manner by the gentlemen making the nominations and others. The ballot resulted in the election of Jas. Meathe, who mounted the rostrum and suitably expressed his thanks for the honor conferred on him.

For vice-president, P. Tierney of Providence, R. I., Wm. McCoach of Philadelphia, W. H. Doyle of Philadelphia, Thos. Culloton of Chicago, L. B. Cross of Kansas City, and Thos. H. Radcliffe of Brooklyn, were nominated. Mr. Radcliffe being the only nominee

accepting the nomination, the secretary, upon motion, was directed to cast one ballot for him, thus making the election unanimous.

The place for holding the next annual convention was then considered, and Cleveland was the unanimous choice.

The names of the State vice-presidents decided upon by the association were then handed in, as follows:

Arkansas, J. A. Monahan.
Southern California, Geo. E. Howe.
Northern California, James E. Britt.
Connecticut, A. J. Clerkin.
District of Columbia, James Cunningham.
Illinois, J. B. Breen.
Iowa, John Burnside.
Kentucky, A. M. Ramsey.
Maryland, J. C. Mitchell.
Massachusetts, J. F. Deedy.
Michigan, W. C. McGurrin.
Minnesota, Geo. A. Pease.
Missouri, Richard T. Connell.
Nebraska, John Rowe.
New Jersey, C. Sullivan.
New York, W. G. Reid.
Ohio, L. Poplowski.
Pennsylvania, John A. Kramer.
Rhode Island, Patrick Tierney.
Texas, W. H. Otter.
Wisconsin, W. H. Halsey.

E. J. Hannan then made a motion, which was carried, that the State vice-presidents mentioned be named as a whole, and that the States not appearing in the list have their presiding officers appointed by the incoming Executive Committee.

W. E. Goodman was unanimously re-elected treasurer.

Jas. Crumley of Detroit was the selection for secretary, the appointment being indorsed by the convention.

The president announced the following members of the Executive Committee:

L. B. Cross of Kansas City.
T. P. Culloton of Chicago.
D. G. Finnerty of Boston.
C. C. Dewstoe of Cleveland.
W. H. Doyle of Philadelphia.

After a vote of thanks to the retiring officers was taken, the convention adjourned *sine die* at 12 p. m.

Jets and Sprays.

FRANK R. HALL, C. HALL and GEO. W. PRATT represented Samuel Hall's Son, New York, and showed Hall's improved pipe wrench and pipe clamp for using the wrench on brass and plated pipe. A scale is on the jaw of the wrench for setting to suit any size of pipe, and it is so constructed that it does not jam and fasten on the pipe, but releases immediately.

G. F. HICKMOTT gave a pleasing reminder of the Birkery Mfg. Company, Hartford, Conn., in a neat match safe bearing a cut of the Birkery ball cock.

A HANDSOME EXHIBIT of sanitary earthenware was made by the Keystone Pottery Company, Trenton, N. J., in charge of Walter Lyon. A space 10 feet on the wall was decorated with round, square and oval lavatories ornamented with flowers and gilt. On a platform in front of the lavatories, washout, hopper and siphon closets were shown, some, plain and others hand-

somely ornamented in relief designs in colors and gilt. J. H. Lyons, J. A. Umpleby and J. Brian were also at the convention.

THE LEAD LINED IRON PIPE COMPANY, Wakefield, Mass., made an elaborate display of their lead lined iron pipe and fittings on a specially designed display stand in charge of Thomas E. Dwyer, who presented the delegates as a souvenir with a folding steel rule in a neat leather case. This exhibit was closely examined and the sectional samples gave a clear idea of the method of connecting and the security of the joint.

B. K. LOUGHLIN, representing J. E. Jeffords & Co., manufacturers of sanitary pottery, at 2715 Edgemont avenue, Philadelphia, extended an invitation to the delegates to visit their factory and witness the process of manufacture of plumbers' earthenware.

B. DALE, Milwaukee, Wis., exhibited a handsome nickel plated sample of the Dale patent flush tank valve, which is said to be adaptable for use with any closet and unaffected by dirt or lead chips.

THE DETROIT SANITARY SUPPLY COMPANY, Detroit, Mich., distributed catalogues of their clean sweep non-siphon traps and specialties in nickel plate, brass and lead.

C. P. MONASH represented the Van Aken Steam Specialty Company, Chicago, and distributed some attractive illustrations of Murphy's packless valve, which reminded the delegates of interesting experiences.

I. N. GLAUBER and A. M. BUCHMAN represented the Glauber Brass Mfg. Company, Cleveland, Ohio, and distributed a yellow silk badge bearing a miniature stop cock.

THE PHILADELPHIA HOUSE of the Craue Company, Chicago, had a display of steam and water valves, both globe and gate patterns, pop safety valves and some special fittings in charge of G. M. Bridgeman, F. W. Downs and A. H. Jones.

THOMAS HYDE, Albany, N. Y., presented the delegates with circulars of the Common Sense trap screw and the Dandy cleanout.

W. A. KELLY, Cleveland, Ohio, had an exhibition and distributed half-tone illustrations of the Electric siphon closet tank and the Kelly lock nut for basin cocks.

J. V. L. KLAPP of the Keystone Lead Works, Philadelphia, enjoyed the convention and made many new acquaintances.

THE MEYER-SNIFFEN COMPANY, 5 East Nineteenth street, New York, was represented by Marcus F. Ketcham, who met many old friends whose acquaintance was made when he traveled the whole country for their sanitary specialties.

J. D. STILES of New York and Harry G. Logan of Philadelphia greeted the many users of the Jenkins valves, made by Jenkins Bros.

DICK REED is the way this popular representative of the H. B. Smith Company, Westfield, Mass., is known to the users of steam and hot water boilers and radiators, of which the house make a large line.

R. M. WILSON, Rome, N. Y., was represented by J. O. Wilson of the New York office, at 92 Walker street. Nickel plated copper boilers and solid copper bathtubs are two specialties that were brought to the attention of the delegates.

THE TEMPLE VENT FITTINGS shown by Oliver Schlemmer of Cincinnati, attracted no little attention from the plumbers. By means of a partition in the fitting, which is introduced into the vent stack, the vent

from a fixture may run direct from the trap to the stack, as the partition runs up inside of the fitting above the top of the fixture. This avoids an unsightly display of pipes and some extra labor.

L. HASSINGER displayed a steel clad bathtub for the Steel Clad Bath Company, New York, and the new Trageser all copper sanitary baths for the John Trageser Steam Copper Works, New York. He had many visitors.

F. D. JOHNSON, in room 180, showed a model of the new Hersey steam and hot water heater made by the Hersey-Atwood Company, Clifton, N. J. All fire surface and vertical circulation was the claim made.

EDWIN S. MARSH, Chicago, had circulars of his open way sewerage and tide water valve where they caught the plumber's eye.

C. A. BRAY, 155 Eliot street, Boston, exhibited the Champion clamp machine for making straps of light sheet metal strips for securing the pipes of a plumbing system.

SECRETARY H. WARREN TERRY of the W. S. Cooper Brass Works, Philadelphia, and Frank T. Merwin talked Nautilus closets, aluminum baths and their line of sanitary specialties when pressed for information.

PECK BROS. & Co., New Haven, Conn., were represented by W. B. Hubbard of the Boston House and A. J. Purdue of New Haven, who were greeted gladly by the plumber, though nothing was said of their splendid line of plumbers' brass and nickel plated goods and sanitary apparatus and fixtures.

J. W. PARKER, 41 North Seventh street, Philadelphia, explained the merits of his noiseless exhaust to the heating plumbers.

W. T. HUDSON gave pointers that James W. Birkett, 351 Jay street, Brooklyn, made a splendid line of gas and electric lighting fixtures.

THE FOWLER RADIATOR MFG. COMPANY of Morristown, Pa., rented a room across the street from the hotel and made a fine display of their new Universal radiator, which can be extended as a wall coil, used as an indirect, as a direct-indirect, as a flue and as a bracket radiator. They were handsomely decorated and left an impression on the sightseers. E. P. Bates is using these radiators in the Masonic Temple at Albany.

H. ROMEYN SMITH, Syracuse, N. Y., made a fine display of plumbers' gasoline goods, showing the Junior and Imperial torches and the Hot Blast furnace for tinners and plumbers. The torches are fine specimens of brass work, and are adapted for wiping joints and seams, as well as thawing frozen pipes and melting off brass work.

THE F. W. FOSTER MFG. COMPANY, Boston, Mass., distributed "Something about Stamps and How to Get Them," in which all seemed interested. In a small envelope containing a moral about the Foster high pressure ball cock was a little booklet for keeping postage stamps and containing two pieces of court plaster. This was in the shape of a letter posted to the company and bearing in addition to the address the following: "Stick to the Foster and you will have stamps."

H. J. GLITCHER, representing the National Brass Mfg. Company, Cleveland, Ohio, showed a section of a lavatory with a patent waste and overflow arranged so that the overflow could be flushed. Catalogues

of the specialties of the company were presented to the delegates.

THE SOUVENIR COLLECTION of half tone engravings of the Continental Hotel was gathered by the delegates as a memento of a hospitality that was very agreeable.

A. EDWARD BRADLEY represented the Beaton & Bradley Company, Southington, Conn., and showed their chain pipe hanger and spring pipe clamp, distributing a neat price-list.

O. H. JONES had a fine display of the high pressure ball cocks made by the F. W. Foster Mfg. Company, Boston, Mass. They were shown in all sizes up to the new 3-inch cock, which is of special construction. These cocks have been used under a pressure of 245 pounds with satisfaction, and are made to stand 500 pounds.

PRESIDENT W. P. POWERS of the Powers Regulator Company, Chicago, and Percy MacCallum of the Boston house, explained the advantages of a system of regulation for all heating plants to many interested listeners.

T. VAN ETEN exhibited the manufactures of the Zero Valve Company, Buffalo, N. Y., showing the Zero and Vollmer Anti-freezing valves, a swing seat for hopper closets, and the new H. D. W. vent cap. He distributed a neat souvenir catalogue printed in colors, with covers of celluloid printed in red and blue and tied with a blue ribbon. Their exhibit attracted much attention, the anti-freezing stop and waste valve particularly.

THE A. WILHELM COMPANY, Reading, Pa., distributed "a plum for the plumber" and "a gauge for the steam fitter" in a neat circular showing a *fac-simile* of the can with the label of their aluminum elastic cement for pipe fitting.

JAMES W. TEMPLE, 1012 Columbia avenue, Philadelphia, exhibited his new water closet pull designed to avoid the usual chain pull being exposed. It provides for the chain or wire to be placed behind the plaster or wainscoting.

MANY VISITORS secured one of the hand books of the Master Builders' Exchange of Philadelphia for future reference, as it gave the Philadelphia building law and the plumbing and house drainage laws. The advantages of the builders' exchange and their uniform contract is given. Half tone engravings show the trade school departments, and a description of the exhibits at the permanent exhibition makes the book interesting to tradesmen. Copies can be secured on writing to the Master Builders' Exchange, at Philadelphia.

S. J. PUTNAM, Prince's Bay, Staten Island, N. Y., distributed engravings of the Niagara ejector, a urinal spray adapted for either lead or iron pipe and easily attached.

GEO. HOWELLS of McCambridge & Co., Philadelphia, was one of the most courteous and genial tradesmen who visited the convention. Their line of sanitary plumbing supplies is complete, and includes the handsomest lavatories, baths and water closets. Their special ship water closet is used on the new American line steamers St. Louis and St. Paul.

LEWIS W. GOULD, Vineland, N. J., was an interested visitor at the Convention.

DOYLE BROS., 62 North Clark street, Chicago, distributed literature of their closet repair connections.

WM. BUSS of Buess & Co., 319 East Ninth street, New York, dealers in plumber's marble and slate goods, was the knight who

attended the ladies from New York while the conventions were in session.

GEO. A. KILEY, Hazleton, Pa., was one of the delegates who constructs electrical work as well as plumbing and heating systems.

OLIVER SCHLEMMER, 1811 Linn street, Cincinnati, Ohio, distributed circulars and showed the O. S. distributing fitting for hot water heating. Placed on a riser this tee, by means of a partition, insures a radiator on the lower floor being heated without the several joints to make tight and nipples and fittings now necessary.

THE W. H. PAGE BOILER COMPANY, Norwich, Conn., was represented by W. H. Page, Alexander Don and W. D. Clark and the Volunteer and All Right steam and hot water boilers were by no means the only subjects of their discussion.

E. A. HIBBS, Philadelphia, was represented by Samuel Hibbs, who presented their business card relating to range boilers of all sizes, styles and special high pressure boilers.

THE ADAMS RADIATOR COMPANY, Reading, Pa., was represented by W. H. Clark, who showed a photograph of a new radiator that was pronounced handsome by all who saw it.

W. E. MORGAN and D. W. HOTCHKISS, representing the E. S. Wheeler Company, New Haven, knew every New England plumber.

FRANK STRATTON, Columbus, Ohio, was a delegate to both conventions.

RICHARD H. MAGUIRE, New York, and F. E. McGUBBEN, Washington, did the honors for the Henry McShane Mfg. Company, Baltimore, Md.

Was there ever a convention where a plumbers' badge carried such a commercial value as at the Philadelphia convention?

A FAIRBANKS SCALE in the corridor of the parlor floor enabled delegates to keep track of their avoirdupois, and was liberally patronized.

THE OFFICIAL BOOK of the Brooklyn Master Plumbers' Association was distributed to the delegates. It was bound as a pocket book, in a leather cover, with a list of the officers and members of the city departments, 30 pages of advertising and a ledgerized memoranda with 50 blank pages and a pocket for loose papers.

JOHN MITCHELL made many friends by his prompt and fair decisions and correct disposition of all matters submitted. In the opinion of the delegates Mr. Mitchell made an excellent presiding officer, and his administration has been a success.

CHAS. I. HOBKIRK gave a friendly greeting to the delegates, and his card bore the address of the Delamater Iron Works, New York, and their line of hot air pumping engines.

THE RHODE ISLAND PLUMBERS presented a unique handbook to the delegates containing a list of members and other interesting matter. It was bound neatly in morocco.

AL. T. BOOTH and JAMES G. SCOTT did the honors among the delegates for the new plumbing supply house, the Newell-Booth Company, Philadelphia.

THOMAS SAVILL and M. E. MURDOCK distributed circulars of closet repair connections and the Savill patent coupling for Savill, Wells & Co., Philadelphia.

C. SULLIVAN of Newark went to the rostrum and spoke his piece and carried his end. He will be sent as a delegate next year.

JAMES MUIR of New York was accorded a cordial greeting by the entire delegation.

L. B. CROSS, as usual, was in demand for reading papers and was rewarded for his labor by being accorded the honor of reading a poem by H. B. Middlebrook.

MRS. G. WALLACE SMITH of Philadelphia, in appreciation of her efforts to entertain the visitors, was presented with a handsome memento by a committee from the ladies from New York. The committee were Mrs. John Yule, Mrs. A. Cameron, Mrs. McDowell, Mrs. Wm. Montgomery, Mrs. Place and Mrs. Buess. The gift was a handsome glass basket ornamented with a design in relief decorated in gilt. This was supported by a pretty silver rest.

THE WALLACE PLUMBING SUPPLY & SPECIALTY COMPANY of Philadelphia extended a greeting to the delegates, the honors being done by Frank Wallace.

GUSTAV H. KOVEN represented Heye, Koven & Co., New York, manufacturers of boilers and expansion tanks.

EDWARD C. MILLER showed miniature fittings of the line made by the Perfection Cleanout Company, Haverhill, Mass., and a full size ell with their new Perfection cleanout, which leaves the inside of the pipe smooth, and which can be attached and removed quickly with a pipe wrench.

B. I. ASHEMAN gave here and there a pointer about the pipe tools and machinery made by the Armstrong Mfg. Co., Bridgeport, Conn., which were well known to many of the plumbers.

W. McK. BARBOUR of the Boston Furnace Company, Boston, Mass., enjoyed a visit to the conventions.

FRANK H. HOFFMAN and FRANK ROURKE represented the Rardolph & Clowes Company, Waterbury, Conn., who make the Brown copper boiler and a line of plumbers' specialties in brass goods.

A PLEASING FEATURE of the convention was the presenting each delegate with a chart of the theater, with the spaces for each delegation printed in colors, so that there was no trouble in getting properly seated without confusion.

THE WISCONSIN PLUMBERS gave out a calf covered reference book, giving the officers and by-laws of their association, the Baltimore resolutions, some miscellaneous recipes, some convenient tables, some list prices, estimate blanks, discount tables and a list of their members.

OWEN & SALTER, Philadelphia, manufacturers of plumbers' goods, were represented by A. G. Heston and Thomas F. Hazelton.

THE WM. PENN silver souvenir spoon and the china soap cup presented to the ladies were examples of artistic workmanship and of exquisite design.

THE LADIES were unanimous in pronouncing the hospitality of Philadelphia as perfect and the entertainment provided as surpassing all efforts of the past. They regret that all the conventions cannot be held at Philadelphia.

ALLEN GAWTHROP, JR., Wilmington, Del., distributed a comprehensive pamphlet of Gawthrop's hydraulic ram that was preserved by many of the delegates for the information it contained.

ALEXANDER S. STEWART did the honors for Tatham & Bros., Philadelphia, manufacturers of lead pipe, sheet lead and pig lead.

FRANK PHILLIPS, Baltimore, second vice-president of the Leibbrandt & McDowell Stove Company, Philadelphia, visited the convention in company with J. B. Borden of F. M. Borden & Bro., Philadelphia.

APPROX OF THE FACT that a convention of the International League of Press Clubs was being held in the Quaker City this week at the same time as the master plumbers' convention, the Philadelphia Record was moved to observe that these were proud days for the lead pencil as well as for the lead pipe interests.

New Jersey State Association.

The plumbers of New Jersey assembled in one of the parlors of the Continental Hotel on Wednesday morning to form a State Association at the call of the State Vice-President John Hickman. Those present were the National officers, John Mitchell and H. J. Pattison and W. J. McDermott, president of the New York State Association of Master Plumbers.

C. E. Schmidt of the Carrie Hardware Company, Atlantic City.

J. J. Kiehl, W. J. Cross, Edward Moore, Chas. H. Shelk, J. S. MacDonald, F. T. Kelaher, C. T. Miller, and J. Blackshaw, Jersey City.

Thomas Bazley, Long Branch.

C. Sullivan, W. Zelfiff, N. J. Steiner, F. J. Sturn, C. O. Rourke, Elias Berla, B. Berla and M. Bleything, Newark.

John Flitcroft, Ocean Grove.

James T. McNab, B. J. Roegiers, Chas. Walls, John Hickman, R. Beaumont, James Kearney, Paterson.

Mr. Hickman opened the meeting with a short, crisp address, recounting his work for the past year, setting forth the beneficial results of the local associations formed and urging the formation of a State organization. On motion of W. Zelfiff Mr. Hickman was made chairman. He announced the first business would be the election of officers and the following were elected: President, Elias Berla.

Vice president, Edward Moore.

Secretary, J. T. McNab.

Financial secretary, J. S. Flitcroft.

Secretary, J. J. Kiehl.

Mr. Hickman invited the new president to the chair, and Mr. Berla made a brief address, advising the delegates to report their action of forming a State association to their local associations and to secure their approval. C. Sullivan moved that a committee be appointed to draft resolutions to thank State Vice President Hickman for his good work, and President Berla invited National President Mitchell to appoint the committee, which he chose as follows:

C. Sullivan, E. Moore, A. Don and Elias Berla.

C. Sullivan was then elected to be recommended to the National Association for State vice-president.

On invitation W. J. McDermott of New York made some suggestions to the new association to aid it in its work. F. J. Sturn, on behalf of the Master Plumbers' Association of Newark, N. J., invited all present and the plumbers of the State to join them in celebrating their annual Plumbers' Day, on Saturday, July 27, in a clam-bake at Pleasure Bay, N. J. The meeting adjourned to meet on the boat to Lincoln Park in the afternoon excursion, to transact further business.

The New Jersey State Association met at Lincoln Park and arranged some special business and adjourned after issuing a call for a meeting at Newark, at the headquarters of Newark Association on Market street, on June 28. Each local association is entitled to be represented by its presiding officer and one delegate.

Excursion on the Delaware.

The delegates and their lady friends assembled at the Race street wharf at 2.15 Wednesday afternoon as guests of the Philadelphia master plumbers and embarked on the steamer "Chauncey Vibbard." A short sail up river brought the party abreast of Cramp's shipyard, where a turn was made and ample time allowed for an inspection of the yard and a view of the immense vessels in course of completion. The stately liner "St. Paul," sister ship to the "St. Louis," of course claimed a good deal of attention, although the war ships were objects of unconcealed interest. Proceeding, the vessel stemmed down river about 12 miles until Lincoln Park was reached. The various objects of interest along the river were pointed out to the visitors and the short journey was much enjoyed. Arrived at the park the company participated in the pleasures afforded by the resort, and at 6 o'clock repaired to the pavilion, where an excellent dinner was provided and a couple of hours pleasantly spent. About 8.30 a programme of fireworks was commenced, this feature of the entertainment lasting about half an hour. The display concluded with a set piece embodying the familiar seal of the National Association. The illumination of the grounds was particularly fine, the initials N.A.M.P. forming the basis of many of the designs. The company re-embarked on the steamer for the return trip at 10 o'clock, and after a pleasant sail reached the city, all much impressed with the trip and the hospitality of their hosts. The company was considerably augmented by the addition of the members of the Philadelphia Association and their friends, and the estimated number of those taking the trip was 1500. There was no hitch in the arrangements, and everything at the resort in the way of amusements and refreshments was placed at the disposal of the guests.

The Souvenirs and Trolley Ride.

The ladies on the carriage ride were presented with a handsome after dinner coffee spoon. The handle was a figure of Wm. Penn, with the word Philadelphia across the stem and the date 1895 in the bowl. The spoons came from the well-known Philadelphia silversmiths, J. E. Caldwell & Co., and were said by the ladies to be simply beautiful. On Thursday afternoon a "trolley ride" through the beautiful suburbs of Philadelphia was taken, the ride in-

cluding Jenkintown, Willow Grove, Chestnut Hill, and the celebrated and historical Germantown district with its attractive scenery and handsome residences. This was the occasion for presenting the fair guests with a souvenir hanging soap dish and brush holder made of non-crazable vitreous china, by the Keystone Pottery Company, makers of sanitary earthenware, at Trenton, N. J. The piece of fine china was handsomely decorated after the Limoge style with blue and gilt, and again the Philadelphia hospitality called forth the unlimited praises of the gentle sojourners.

All the delegates and ladies were presented with a souvenir book of Philadelphia. The book was handsomely bound in a maroon silk cover bearing the seal of the Philadelphia Association in embossed gilt and the words, "Souvenir, National Association of Master Plumbers, Philadelphia, 1895." The book was profusely illustrated with fine half-tone engravings, showing the principal buildings and scenes in the city and Fairmount Park. It contained a list of the officers and of the members of the Philadelphia association and their by-laws. A brief description of social, educational and commercial institutions is given, with crisp reviews of its club life and amusements and sports. The alternate advertisements of the plumbing goods manufacturers and supply houses throughout the country who had lent their hand in assisting the local association to extend a splendid hospitality.

Ladies' Reception and Entertainments.

A pleasing feature of the convention was a reception at the Continental Hotel by the ladies of Philadelphia to the visiting ladies, and the hospitality dispensed plainly showed the guests that their sojourn would be informal and pleasant. A book of fire parchment paper, handsomely bound in white seal leather, was presented to each lady, and on giving her autograph she was presented with a souvenir programme of the entertainments provided, a souvenir book of Philadelphia and an invitation to a carriage ride through Fairmount Park on Tuesday afternoon.

Among the ladies present were Mrs. John Trainor, Mrs. J. F. P. Carey, Mrs. Henry Ewinger, Mrs. P. H. Callahan, Mrs. J. Quinn, Misses Lyous, Mrs. P. M. Murphy, Mrs. P. Sanders, Mrs. Paul Redieser, Mrs. Charles C. Breyer, Mrs. Chas. J. Herbert, Mrs. Robert Griffith, Mrs. Thomas Conway, Mrs. Chas. F. Byrne, Mrs. J. J. Wade, Mrs. T. P. Culleton, Mrs. John Roland, Mrs. James Deveney, Mrs. John M. Simpson, Mrs. W. W. Murphy, Mrs. C. W. O'Neill, Mrs. P. H. Murphy, Mrs. H. Raymond, Mrs. Geo. B. McCall, Mrs. T. R. DeLace, Mrs. A. H. Brown, Mrs. John Mitchell, Mrs. H. J. Pattison, Mrs. T. J. Tute, Mrs. Geo. Carmichael, Mrs. J. J. Lawler, Miss Annie Sheap, Mrs. O. B. Fuller, Mrs. Phil C. Ring, Mrs. Chris Branch, Mrs. John O'Brien, Miss May Trainor, Mrs. J. F. Trainor, Mrs. J. H. Castler, Mrs. H. J. Kueper, Mrs. J. S. Stygall, Mrs. F. H. Suhe, Mrs. J. C. Courroy, Miss E. A. Donahue, Miss Kirk, Mrs. Daniel Russell, Mrs. J. S. Fuller, Mrs. F. G. Lees, Mrs. John M. Page, Mrs. H. B. Middlebrook, Mrs. James Ahern, Mrs. P. J. Kane, Mrs. E. J. Loneragan, Mrs. E. J. Nolan, Mrs. Kramer and Miss Kramer.

On returning from the carriage ride the ladies visited the evening session of the convention, and later the United States Marine Band gave a concert.

What are the Abuses that Have Developed in a Master Plumbers' Association? What is the Remedy?*

BY JEREMIAH SHEEHAN, ST. LOUIS.

In selecting one of the six subjects suggested by the National Essay Committee I have chosen one which is to my mind the most important for the association properly conducted without abuses depends the accomplishment of all our objects. It is the only solid foundation upon which we can lay with safety all our hopes for the accomplishment of our laudable undertaking.

*What are the Abuses that Have Developed in a Master Plumbers' Association? What is the Remedy?**

The only real abuse that I know of as existing is the abuse which the presiding officer receives from his friends on the floor when he rules them out of order. There is friendly rivalry in ranks. There are two or more parties in all associations, as there are in political organizations, each striving for ascendancy. Sometimes there is intemperate rivalry for office and the honor of representing the association at national conventions, and which, perchance, causes a little temporary hard feeling. Surely this is not one of the alleged abuses. There is not a better evidence of the life and progress of an association than to see 150 members out of a membership of 100 present at an election of local officers and delegates to the convention. Show me an association with a larger attendance at meetings and rivalry for the honors and I will show you an association which accords protection to its members, for there are many details necessary for local protection that must be attended to by the local association in order the receive the full benefit of affiliation with the National Association. We need the strong arm of the national to help us, and never before was this more evident than to day.

LACK OF ASSOCIATION INTEREST.

What might, perhaps, be called a common abuse is the lack of interest evinced in the affairs of the association on the part of those who should be foremost in promoting legitimate reforms, in preserving self interest and encouraging and assisting officers in carrying out the resolutions of the organization. But this can hardly be called an abuse, nor attributed to the growth of organization, for it existed prior to the formation of the association.

We will take up the latter question of the subject. It will be admitted that the trade has attained a greater measure of success than the most sanguine at first anticipated possible, and that there are no abuses except from the pessimist's standpoint, and that the undesirable elements of membership are all organizations with unhealthy and dissatisfying principles, which depress the buoyant spirits of those who look upon the bright side of life. What is the remedy? Or, more relevant to existing conditions, what can be done toward removing all regarding obstacles and to consummate more complete and uniform protection and elevation of the craft and its followers? We have made much advance along the line of protection, and equal advance in promulgating the salutary principles of our trade. The permanency of the National Association is assured and its influence recognized and felt. I think that now more attention should be given to improving the grade of work. This can only be done by a permanent suspension of the outrageous cutthroat competition so prevalent everywhere.

AN HONEST JOB.

Our motto should be, "An Honest Job." There is work for all, and there would be more work if more care were taken with what is done. The builders of all our best houses are willing to pay well for good work, but you cannot blame them if they want to get a \$1500 job done for \$1200 or less. Many of us are not experts when it comes to buying a suit of clothes, but the most shrewd will ponder when two suits, apparently the same, are offered, say, one for \$35 and the other for \$45. If the suits are of the same quality and workmanship you may be sure one tailor employs a cheap class of help, while the other is willing to be seen will not shrink the cloth and neglect

many of the minor details necessary for the make-up of a first-class suit, and the other employs first class workmen, shrinks the cloth before cutting, and takes care that the seams are all strong and durable. Some of the material is as good as the money calls for. We all know the first class of tailors and generally avoid them; they generally shift from one city to another; they do not see the error of their way until it is too late; while we laugh at their foolish methods they are poking fun at the plumber. Somewhere I have read, "If we could see ourselves as other people see us," what a wholesale crashing of mirrors there would be. There is not a class of mechanical tradesmen that requires so much hard training to become competent as the master plumbers, and there is not a class as a whole, that receives as little remuneration and as much undeserved abuse. How many plumbers are there like the first tailor, so anxious for work that they will have it at any price, and trust to luck in substituting a less expensive bowl, an inferior grade of pipe and a little lighter, and the customer is helped to do the work, and if this falls stand off the supply houses. Like the first tailor, this class of plumbers is never well off enough to wear the diamonds we are accused of possessing.

First we will have to acknowledge our faults, not abuses, which are the cause of our disfavor and an apparent disregard of the duty we owe to ourselves and posterity, which in many cases will take up the work where we have left off.

FOUNDATION PRINCIPLES.

As already stated, the association is a foundation and the success of an organization is dependent upon the governing principle. For centuries associations of all trades and callings have existed, and their success has depended on the controlling principles and acts of members. Harmonious organization, an active unanimity of purpose, not individualism and inimical relations, are necessary for success. Many associations have been formed on the inspiration of the moment, perhaps as the direct result of acts of workmen or on the convincing and pleasing utterances of a national organizer. They have started out with all the enthusiasm possible, but have failed in a few months, simply because the foundation was not properly laid. Radical measures may have been adopted which were impossible of execution, and failure caused disruption. In other cases nothing particular was attempted. They organized simply because they thought they should, and, having no definite line of action to pursue, drifted into inconspicuous desuetude.

In the construction of a building great care is taken at the foundation. The larger the structure the more care exercised. The master plumbers' organization is universally acknowledged to be the best trade organization in existence, so we must carefully look to the foundation. The various Provinces have considered our motives as honorable and worthy of emulation, and only recently held a meeting in Montreal with a view of attending our national convention in Philadelphia, and with the hope that provision would be made for their affiliation with us.

LOCAL PROTECTION.

Within the jurisdiction of the National Association the St. Louis Association was the first to formulate and successfully carry out a line of more complete local protection than provided in the Baltimore resolutions. In furthering our local interest the national protective resolutions were lost sight of, as has been done in other cities. I have been informed that the largest association in the national organization could not produce a half-dozen signatures to the Baltimore resolutions. The resolutions were alleged to have been signed, but no proof was on hand. However, it is pleasing to note that President Mitchell has secured over 250 signatures to the resolutions during the past six months. It is unnecessary to review our glorious past as a "banner" association. Associations are formed for the purpose of giving strength and obtaining by individual effort. United we stand and divided we fall" tersely expresses the principles on which we have depended and which have given us our prestige, and on which both local and national associations must depend for future success, whether it be in suggesting arrangements with the supply companies which will make their associations beneficial to ours, or influencing State and municipal legislation in the interest of sanitary plumbing or refusing to give esti-

mates to sub-contractors. In ascertaining the strength of a piece of timber the weakest point measures its power, and to a very great extent this rule will apply to the association's power for good. A casting aside of all local differences, whether it be in local, State or national associations, is essential. Our future efforts demand more united action to preserve and extend the objects for which we are organized.

TRAPS AND VENTS.

THE NEW CHICAGO PLUMBERS' SUPPLY HOUSE recently referred to is now in running order. It is located at 45 Franklin street. The style of the firm is Western Plumbing Supply Company, and S. E. Young is manager. Mr. Young was connected with the widely known Chicago plumber, E. Baggot, for 23 years, so that he evidently should know just what plumbing is all about. He also enjoys an extended acquaintance with the trade, which is another excellent qualification. Further, he is brimful of enterprise and believes in giving personal attention to all details. The firm have started in a modest way, having a store room only 20 x 60 feet, but it has a 16-foot ceiling, which enables it to be made practically a two-story store. The bins for carrying stocks extend from floor to ceiling, with a half floor at mid-height to reach the upper tiers. Thus almost every inch of room is utilized, enabling a good stock to be carried. Heavy goods are stored in the basement under this store and also under the adjoining building at 43. A jobbing business will be done exclusively; no special manufacturer being represented. Staple goods will be handled, covering everything that a plumber needs. At present the firm will pay special attention to city trade, having no traveling men out to canvass other territory. They are already doing an excellent business.

L. J. CULLEN, Appleton, Wis., and J. Baile of Chicago, are about to open a plumbing shop in South Kankana, Wis.

WILSON & LAWSON, two young plumbers of Pueblo, have opened a plumbing shop at Florence, Col.

AMSBURY & BROWN of Penn Yan, N. Y., have sold their plumbing business to J. C. Shannon & Son.

THE RACINE PLUMBING & HEATING COMPANY, Racine, Wis., have filed articles of incorporation. The capital stock is \$5000 and the incorporators are C. B. Hulett, A. E. Hay and John Wahlen.

Michael J. Manion.

At a meeting of the Toledo, Ohio, Master Plumbers' Association, held June 5, the following resolutions were unanimously adopted on the death of Michael J. Manion of the firm of Manion Brothers, Toledo, who was drowned near St. Ignace, June 2:

Whereas, It has pleased our Heavenly Father to remove from this earth our beloved companion and fellow member, M. J. Manion; and

Whereas, In all our intercourse as master plumbers and business associates he has ever proved active, energetic and reliable, therefore be it

Resolved, That we tender to his family and friends our deepest sympathy in this the hour of their affliction, and offer our services in any manner as desired.

Resolved, That these resolutions be spread upon the records of the association and that copies be furnished the family of our deceased member and the city papers for publication.

JOHN A. WAITE,
WM. G. WACKER,
JOHN TUTING.

* Presented by the St. Louis delegation at the Thirtieth Annual Convention of the National Association of Master Plumbers, held in Philadelphia, June 11-13.

STEAM AND HOT WATER.

Convention of Master Fitters.

The Master Steam and Hot Water Fitters' Association of the United States began its seventh annual convention in a hall of the Continental Hotel, Philadelphia, on Thursday morning, June 13.

The attendance at the opening session was small, owing to the fact that the National Association of Master Plumbers, of which body many of the Master Fitters are members, held its most important sessions the same day.

THURSDAY MORNING.

The first session of the convention commenced at 11 o'clock, President H. D. Crane of Cincinnati occupying the chair. Motions having been made and carried dispensing with roll call and the reading of the minutes, the president, on motion, appointed the following Credentials Committee:

A. E. Kenrick, Boston.
E. D. Smith, New York.
W. P. Thompson, Philadelphia.
J. B. Hughes, St. Louis.
E. M. Bosley, St. Louis.

The chairman announced that A. B. Jenkins of Jenkins Bros., New York, had very kindly presented a supply of handsome and appropriate badges to be worn by the delegates to the convention. The badges were turned over to the Committee on Credentials for distribution and a committee was appointed to draft a resolution embodying the thanks of the association to Mr. Jenkins for his gift.

The convention then adjourned until 2 p.m.

THURSDAY AFTERNOON.

The meeting was not called to order until 3.35 o'clock. John Traizor of Baltimore, in a neat speech, on behalf of H. B. Middlebrook of Bridgeport, Conn., presented to the association a handsomely framed steel engraving, "Watt's First Experiment," showing the Watt family at supper, and young Watt experimenting with a tea kettle. President Crane accepted the gift in suitable terms and stated that the same would find a place on the walls of the association's headquarters.

On motion of Samuel I. Pope a committee of three was appointed to convey the thanks of the association to the donor of the gift.

The Committee on Credentials then made their report showing 74 members present, having 88 proxies, as follows:

List of Delegates.

ALBANY.

P. J. Sweney.

BUFFALO.

Barnd & Geoger, by Chas. Geiger; John W. Danforth, proxy for Niagara Furnace Company, Wittett, Barrett & Co., J. H. Ruckel & Co., Wm. A. Case & Co., Burgmeister & Co.

ILLINOIS STATE ASSOCIATION.

Robt. Loudon, John G. Roland, P. J. Kane, John W. Mills, proxy for R. J. Ryan, Carson & Co., A. Zwiebel & Co., L. W. Stran, C. G. Smith, J. D. Appleford & Son, Nixon & Crossman, Zeigler Bros., Smith & Moore, G. W. Jameson & Son, Zack & Lymins, Lake & Walters, J. R. Ruddy, H. Marshall, J. R. Blatchford, Doval & Morgan, Morrison & Taylor, John O'Neill & Sons, Chas. W. O'Neill, Wm. W. Murphy.

CHICAGO.

Samuel I. Pope, John W. Mills, Wells-Newton Quay Company, by D. M. Quay; D. N. Quay, proxy for John Woodman, Baker & Smith Company, F. W. Lamb Company, Kehm Bros. & Co., Lyon & Mason, Englehart & Stott Company, John Davis Company, L. N. Prentice Company, Illinois Heating Company, M. J. Cragin, Kroeschell Bros. & Co.; John W. Mills, proxy for Cook & Chick.

CINCINNATI.

H. B. Crane estate, by Harrie D. Crane.

DAYTON, IOWA.

Davenport Steam Heating Company, for G. T. Ahrens; G. T. Ahrens, proxy for Robt. Clayton, Corey & Wernette, P. W. DeHart & Co., G. A. Lister.

DES MOINES, IOWA.

Wallace & McNamara, by J. M. Linnane; J. M. Linnane, proxy for E. Candyke, Asher Heating & Plumbing Company, John Collins, Homer B. Collins, John Burnside.

MINNEAPOLIS, MINN.

Tunstad & Moore, by Jas. W. Moore; Jas. W. Moore, proxy for Kelly & Lamb.

NEWARK, N. J.

J. B. Cryer & Co., by T. B. Cryer.

NEW YORK CITY.

E. Rutzler, proxy for John Neal's Sons; Baker, Smith & Co., by E. D. Smith; Wells & Newton Company, by J. L. Wells. J. L. Wells, proxy for Wm. J. Baldwin, Trask & Carmichael, Evans, Almiral & Co., John D. Clark, by Chas. J. Gillis; Gillis & Geoghegan, by Chas. J. Gillis; James Curran Mfg. Company, by James Curran; H. B. Smith Company, by A. Mercer.

RHODE ISLAND STATE ASSOCIATION.

Phillips & Phillips, by Thomas L. Phillips; F. Coggeshall, by Dan. J. Hersey; H. B. Smith Company, by Jas. W. Smith; Henry T. Root & Son, by Hiram F. Root; Pawtucket Steam & G. P. Company, by J. E. Andrews.

ROCK ISLAND AND MOLINE LOCAL.

Davis Company, Rock Island, by T. B. Davis; Davis Company, Moline, by

T. B. Davis; T. B. Davis proxy for Allen Myers & Co., Blake & Murphy, Rosenfeld Bros., Slattery & Lamp, M. Yerbury, Dan'l Hartwell, H. W. Plambeck & Co. and James Hewson.

ST. LOUIS LOCAL.

John O'Brien, John Ramming, Ring & Reardon, by P. C. Ring; Ringen Stove Company, by Chris. Sodeman; Branch Steam Heating Company, by Chris. Branch; Globe Steam Heating Company, by E. M. Booley; Hughes & Stone, by John B. Hughes; American Heating Company, by O. B. Fuller; Breslin-Sheble Company (Mfg. Co.), by E. A. Sheble; Missouri Steam Heating Company, by H. Z. Sweney; H. Z. Sweney, proxy for Wells-Newton Quay Company and Doherty Bros.

ST. PAUL LOCAL ASSOCIATION.

Roberts-Goss Company, per J. D. Roberts; J. D. Roberts proxy for George R. Martin, McDonough & Bowers, Geo. M. McGeary, Thomas Davis, J. P. Adamson, McQuillan Bros., A. O. Nepil, Allen Black.

PENNSYLVANIA STATE ASSOCIATION.

Baker, Smith & Co., by E. D. Smith; Thompson Bros., by Wm. P. Thompson; Jno. C. F. Trachael, John P. Smith, Reeves & West, Jno. P. Steele Iron Company, by G. P. Steele; P. Gornley, Rand & Conderman, Onderdonk Heating & Ventilating Company, by Chas. S. Onderdonk; H. A. R. Dietrich, W. S. Gernsey, Jno. H. Waters & Bro., W. O. Holmes, W. H. Clarke, B. G. Carpenter, Geo. A. Kiley, Lewis T. Rodan, N. A. Drummheller, Jno. P. Smith, Wm. Morgan, Jno. P. Schaffer.

MASSACHUSETTS STATE ASSOCIATION.

Albert B. Franklin, Walworth Construction Company, by Arthur C. Walworth; Ingall & Kendrick, by P. H. Kendrick; Thayer Heater Company, by John C. Hunneman; Kenrick Bros., by A. E. Kenrick; Daniel Russell; Buerkell & Co., by J. F. Buerkell.

OHIO STATE.

Borger Bros. & Co., by Frank Stratton; Frank Stratton, proxy for Caleb & Contem, John Kearney & Co., W. H. McLain Company, J. J. Smith Plumbing and Heating Company, Sunkel & Heckman, Whyler & Ronseert, Brohl & Appel, Leonard Bros., H. P. Cahill & Co., Theobald & Co., Novelty Machine Works and Oby & Co.

DAYTON LOCAL.

Frank Stratton, proxy for Brooks & Son, Crowley & Stewart, Fauver & Congdon, M. J. Gibbons, McDirmont & Clement, Ware & Moodie.

CONNECTICUT STATE ASSOCIATION.

John M. Page, O'Neill Heating & Plumbing Company, Lincoln, Neb.; W. S. Patterson & Co., Appleton, Wis.; David Ahern & Son, Fond Du Lac, Wis. (by W. S. Patterson, proxy); John Rowe & Co., Omaha, Neb.; Jas. W. Gifford & Co., Elmira, N. Y.; O. H. Gridley & Co., Elmira, N. Y. (by Jno. S. Sadler); John E. McCall, Chippewa Falls, Wis.

A. E. Kenrick said that the Committee on Credentials recommended that W. F. McEntire, secretary of the St. Louis Association, and a lawyer, be al-

lowed to take the floor as a representative of his association. On motion, the recommendation was adopted.

The committee was, by motion, continued.

The badges presented by Mr. Jenkins were then distributed to the delegates. The badges took the form of a button of oxidized silver, with a maltese cross in the center, and the legend "He who helps me, I help" within a circle. President Crane then read his report, which is in part as follows:

President's Address.

The address of President Crane was in part as follows:

It is with pleasure that I welcome you to this our seventh annual meeting. You have come here together from all parts of the country to legislate for the common weal of not only yourselves but of the great body of the master fitters of the United States. I trust that firmness tempered by deliberation and zeal controlled by moderation may so govern our actions that success will crown our efforts. This is, indeed, the most crucial period in our life as an association. We will be called upon at this meeting to face problems and establish policies of more importance to our organization and business than have ever before been presented for our consideration. Questions will be submitted for discussion for which we have no precedent to guide us, no example to follow. We must hew out a new road through an unbroken forest, and we must so blaze the way that it can be followed at all times with certainty and safety by those who come after us. Since we last met in convention together the economic laws of our association have been so materially changed as to virtually amount to a trade revolution. With what success the campaign has been conducted thus far is patent to all, but the time has now come when your leaders, chosen a year since, must return to you the trust in them confided, and the future is in your hands and in your hands alone.

This, as I understand it, is to be a business convention and nothing else; therefore I will not take up your time with useless platitudes but will, as briefly as the importance of the occasion permits, review the events of the past year, making such recommendations as I consider it my duty to present, which you will please understand, fellow members, is but the humble opinion of one man, and submitted from a deep conviction of the responsibility of the position to which your franchises have raised me. The first question to which I wish to call your attention is that of

NATIONAL HEADQUARTERS.

If you will remember, at the last convention the committee to whom the subject was referred selected New York as the location for our permanent headquarters, subject to the action of future conventions. This, in my opinion, was a judicious choice, and should be endorsed by this meeting; for I do not believe it is good business judgment to shift our central office as an Arab moves his tents. In the first place, there is the expense, the time lost and the wear and tear which must ever attend such changes of base; then, as we grow older, we become more conservative, and a permanency of location always carries with it a sense of stability and of the idea that we have come to stay. Further, while I will concede to no man in my love and admiration for the great and growing West, born and raised as I was, and living as I always have in that section,

I must allow that, at the present, the greater interests involved in our business are in the East, and I cannot forget that had it not been for the firm stand taken by our New York members on our "Trade Resolution" platform we would not be as far advanced in our reform movement as we are to-day.

OUR "OFFICIAL BULLETIN."

For which we have to thank the clear-headed foresight of our National Executive Committee, after our "Trade Resolutions." I consider the most valuable feature which has been inaugurated during the year. Started as it was with a simple monthly typewritten report, it has become an indispensable medium for conveying information to our members and for spreading broadcast over the land the glad tidings of trade protection. It may be that its founders builded better than they knew, but it is certainly a fortuitous circumstance that "Trade Resolutions" and the "Official Bulletin" came into existence about the same time, for certainly, without the latter, the principles inculcated by the former would be known to but hundreds, where they are now almost household words with thousands.

I can see much usefulness in the future for this influential though modest pamphlet, and I trust you will, all of you, give it your most hearty countenance and support.

THE PLAN OF CALLING JOINT CONFERENCES.

Two of which have been held during the year, is a most admirable one, for what can be more proper than, when your Executive Committee are called upon to decide questions which are fraught with great possibilities for weal or woe, that they should be able to consult and advise with those who, having been at the head of national affairs, can bring to their aid that mature judgment which is only to be gained by actual experience, and so essential do I look upon these joint meetings that I would recommend that the Advisory Council be increased so as to include every living past president member of the association, instead of restricting the number to five and retiring one each year, as is the law at present. That there may be some expense attached to this I am well aware, but the advantages to be gained more than counter-balance the expense attendant thereon.

THE UNIFORM CONTRACT.

I am relieved to state, has at last been compiled, and is here for your inspection. No less than 20 of our most experienced members have given their time to this document, and now that we have it, we should use it whenever possible, that the time and money spent in its production may not be wasted, and that it may become, in time, what it is in name—our "Standard Uniform Contract."

THE HOUSE HEATING BOILER QUESTION.

The question of how to induce manufacturers and dealers in house heating boilers to cease selling their wares to the consumers direct has vexed our association for years, but it can, if you will, be settled definitely now and here.

It is absurd to suppose that a master fitter can compete with a house heating boiler manufacturer on a heating contract of moderate proportions, for while, undoubtedly, the manufacturer will sell his boiler to the master fitter at a considerable discount, it is idle to suppose that he will sell it at a net cost to himself, and in this day of close margins the difference in the cost or production price and the figure to the master fitter constitutes a respectable profit on a small job; hence, either the manufacturer must abandon the prac-

tice of quoting figures to the fitter and his prospective customer also, or the fitter must go out of this line of the business and leave the manufacturer in possession of the entire field.

Heretofore our hands have been, in a measure, tied, and all we could do was to humbly ask for justice, being forced to satisfy ourselves with whatever was meted out to us, be it more or less.

But, thanks to our "Trade Resolutions," the remedy is now with ourselves, and so long as there are makers of this class of heaters who are broad enough to look at this question in a just and businesslike light, and honorable enough to live up to their convictions, there should be no difficulty for the committee which will be appointed on this subject to show us the way out of the dilemma.

STANDARD FLANGES.

This is another subject which has been handed down from convention to convention, and which I am also pleased to advise you has been at last disposed of, and a uniform standard schedule of flanges officially and finally adopted.

This standard was arranged after many consultations between master fitters, mechanical engineers and valve manufacturers, so as to meet all requirements, and is believed to be as near perfect as possible.

Several of the most prominent manufacturers have changed their patterns to correspond with the standard schedule, and to be consistent and reimburse them for the expense which, at our request, they have gone to, we should make it a point of business honor to use standard flanges on all our construction work wherever and whenever possible.

I would like to see a resolution passed at this convention to that effect.

THE OSBORNE CASES.

Your Executive Committee informs me that these cases are in a state of "innocuous desuetude," and our attorneys, fully prepared at all points, are awaiting the movements of the prosecution.

This is only another instance of the benefit of a united national organization, for there is no doubt in my mind, had we not presented an unbroken front, we, each of us, would have been assailed piecemeal and have been subjected to untold annoyance and much useless expense, but the mere fact of our concerted action and our combined resistance to unwarranted demands has proven our safeguard and defense.

CANADIAN ASSOCIATIONS.

Those of you who were present at our last convention will remember A. G. Purdy of Toronto, Canada, who favored us with his presence at that time, and from whose remarks we were led to believe that an association similar to our own might be formed over the border, which eventually would assimilate with ours. The instructions and intentions then given and expressed, I understand, have been faithfully carried out by your Executive Committee, and that nothing has come of it is no fault of theirs or ours. We stand in the same position toward our brother master fitters in Canada as our country stands to theirs—ready to meet them half way in all that pertains to a closer business or fraternal alliance, but the initiative rests with them; Mahomet must come to the mountain, for the mountain cannot go to Mahomet.

INCREASE IN MEMBERSHIP.

The last convention having made no provisions for this essential feature other than to elect State vice-presidents, whose duties were but loosely defined, at the request of the Executive Committee I assumed charge of this work.

I entered into correspondence with the State vice-presidents with the view

of ascertaining the feeling of the master fitters in their States as to our association, and the reports from many were anything but assuring, but from the West came an encouraging answer to my letter, and I found our Iowa State vice-president, G. T. Ahrens of Daventry, a man after my own heart. By his thorough and persistent efforts the Iowa State Association was formed, the first to break the ice, and the success of this work decided our Executive Committee to push the rejuvenation of our association upon these lines, the results of which have been gratifying to us all, and of which you have been informed through the "Official Bulletin." Your Executive Committee decided it advisable to send me to the Iowa State convention, held at Burlington, and to St. Paul and Minneapolis, which trip I made during the month of January last, resulting in the reorganization of the St. Paul local and the securing of a scattering membership in Wisconsin, which, before our next convention, will result in the formation of an association in that State, and I also did some preliminary work with our State vice-president, John W. Mills, relative to organizing the State of Illinois, which was subsequently accomplished through the unassisted efforts of Mr. Mills.

I made other short trips to Dayton, Springfield and Columbus, Ohio, and I am pleased to report to you the formation of new locals at Dayton and Columbus, and a State organization for Ohio.

On March 7 State Vice-President F. A. Williams instituted the New York State Association, and on April 9 Arthur C. Walworth, under special commission, formed the Connecticut State Association.

The total increase of membership, embracing New State and local associations and national or unattached members, will be given you in the national secretary's report.

There are many other points which I would like in this address to bring to your notice, but I feel that I must not detain you longer.

Before closing, however, I desire to thank you all for the courteous consideration accorded me during my term of office. Also State Vice-Presidents G. T. Ahrens of Iowa, John W. Mills of Illinois, W. K. Downey of Wisconsin, J. S. Farrell of Indiana, and Messrs. Wells, Walworth, Curran, Thompson and Danforth, and our national treasurer, E. D. Smith, have my heartfelt acknowledgments of the valuable assistance and co-operation they have rendered in the organizing work.

To the past presidents of the Advisory Council I am under obligations for much most-needed counsel and advice, but above all do I wish to own my high appreciation of the yeoman labor performed by our Executive Committee. I have no words at my command adequate to express how deeply we all are in debt to these gentlemen who, assuming the responsibility when our fortunes were at the lowest ebb, have, by their unvaried exertions, unselfish sacrifices and undaunted faith in the future, rallied our demoralized and almost disintegrated hosts, and placed us where the banner of victory is within our grasp.

The report of the Executive Committee was next read by J. L. Wells. We print below extracts from the report:

Report of Executive Committee.

Your Executive Committee in publishing "Bulletins" each month, detailing the work of the month previous, has doubtless kept you in touch with the progress of affairs, and believ-

ing that recommendations as to further legislation should come from your national president, or the body of this convention, rather than from this committee, we will, in as concise a manner as possible, endeavor to give you an epitome of our actions and transactions for the past year.

On June 22, 1894, immediately after the last business session of the New York convention, your committee met at temporary headquarters in the Broadway Central Hotel and proceeded, in accordance with the amended constitution, to elect a chairman of the Executive Committee for the coming year. The election resulted in J. Leland Wells being unanimously chosen for that position.

HEADQUARTERS FOR THE YEAR IN NEW YORK.

That having also been left by the convention to your committee, and New York having been designated as the place, a sub-committee chosen for that purpose selected our present offices at 621 Broadway, which, by special arrangement, we now occupy, pending further legislation in this direction on your part.

ANNUAL SOUVENIR.

Taking into consideration the then business depression of the community, and having in mind the trouble and expense attending the publication of the last official souvenir, the committee concluded to dispense with that feature this year, and decided that the proceedings as published in the July, 1894, issue (convention issue) of the *Master Steam Fitter* of Chicago be adopted as the official proceedings of the 1894 convention.

The various subjects referred by the last convention to this committee and the unfinished business which, by resolution, was also assigned us to complete, demanding, in our opinion, more discussion and deliberation than could be given them at this time, your committee thought best to defer any further present action and adjourned subject to the call of the chairman.

OFFICIAL BULLETIN.

A few weeks subsequent to above adjournment, believing that it would draw the local associations and the individual members in closer touch with each other and the national office, and that you should be kept conversant with the business of the association, it was decided to issue, on or near the first of each month, a "Bulletin" of the previous month's official transactions, and to forward a copy of the same to each of the several locals and to the members of the advisory council and State vice-presidents.

Accordingly, the first "Bulletin" was sent out September 1 to the officers and members as above, and was so distributed for the months of October and November, but the demand from all quarters for this document was so great that on January 1 it was arranged to hereafter issue this paper in printed form, and to publish enough copies to supply the demand. It has since, each month, been presented in the shape with which you are all familiar.

We think this the most important new feature adopted during our administration, and an essential adjunct to our trade reform movement. The cost will be given in the report of our national secretary.

JOINT CONFERENCE OF SEPTEMBER 20.

In accordance with the adjournment of June 22, the first joint conference was called on September 20; President Crane, Messrs. Wells, Walworth, Thompson, Danforth, of the Executive Committee, and Past Presidents Gillis, Franklin and Rutzler, of the Advisory Council, were present.

THE UNIFORM CONTRACT.

A sub-committee on this subject appointed by the national president and chairman of your committee, and presenting different reports signed by the several members, a consensus of them was prepared and forwarded to all members of the Executive Committee and Advisory Council for their judgment and suggestions, to be used for the guidance of the Executive Committee in preparing a standard uniform contract, which would, if possible, be satisfactory to all. This was accordingly done, and at a subsequent meeting of the Executive Committee it was adopted as "standard." Copies of this document are to be had at national headquarters, and are subject to your disposal.

ENTERTAINMENTS AT CONVENTIONS.

Following the lines laid down by the last convention, and after obtaining, as far as possible, the opinions of the membership at large, we addressed a letter to all manufacturers and jobbers who had signed "Trade Resolutions," advising them that we should consider it a favor if the feature of extensive and prominent exhibits at this convention be eliminated, and the plan of collecting subscriptions for the purpose of extending to us social entertainments be abandoned, at the same time offering them the hand of good fellowship and inviting them to be present and join with us in such friendly intercourse as is customary between friends and equals.

It affords us gratification to report that this departure met with widespread commendation, both on the part of our members and the supply trade.

CHANGE OF PLACE FOR HOLDING CONVENTION.

The last convention fixed the place for holding this meeting either at St. Louis or Cincinnati during the month of May, but in view of the fact that we are now working on much the same lines and toward the same end as the National Association of Master Plumbers—i.e., trade regulation—after consultation with the officials of that organization, it was deemed expedient to have the two conventions meet nearly at the same time, and at the same place, in order that duly accredited committees from the two associations could consult together on matters of mutual interest for mutual protection. Your committee, however, not wishing to change the rulings of the convention on such an important question so clearly expressed, decided to lay the subject before the members at large, stating in full the reasons for the change, and to act accordingly. The replies received showed 83 votes for Philadelphia, six for St. Louis, and none for Cincinnati, and it is under this decision that we meet here to-day.

LIST OF MEMBERS.

There having been no official list of our members published since 1893, which, owing to changes, lapses and resignations, was wholly unreliable, your committee, early in the fiscal year, determined to issue a new list, but at that time the uncertain status of our membership and, later, the constant additions being made, owing to the formation of new associations, led us to abandon the idea of a fixed and printed list, and to issue a typewritten one to each member, publishing the additions, and withdrawals, in the "Official Bulletin" each month, which, though a somewhat inconvenient method, we trust has fulfilled the purpose of aiding our members in a due observance of Article XVIII of the constitution, anent visiting bidders.

STATUS OF MANUFACTURERS AND JOBBERS WHO HAVE SIGNED "TRADE RESOLUTIONS."

How we could show our appreciation of the firms who are with us for trade protection was no easy problem. The original intention was that no complaints of alleged violations of the agreements would be entertained or investigated by the Executive Committee unless lodged by a member of the association in good standing; it was urged, and with reason, that those firms who had voluntarily signified their desire and intention to assist us in abolishing trade abuses were entitled to equal standing with our members, and to the same right of investigation and complaint. This was agreed to, and the right of complaint now rests with both buyer and seller alike. This, in connection with that yellow label which has been so unanimously admired, should convince the signers of "Trade Resolutions" that we are in earnest when we say "he who helps me I help." It may be that something more in this direction is needed, but just what it shall be, and how to proceed further, you must decide.

STATUS OF MANUFACTURERS AND JOBBERS WHO ARE ALSO MASTER FITTERS.

In October State Vice-President Mills of Illinois wrote us that in the Chicago local the question had come up whether master fitters who were also manufacturers and jobbers could, under its provisions, sell the consumer direct and be "in accord." Considering this question of much importance the chairman of your committee immediately laid the question before the members of the Executive Committee and Advisory Council, and the opinion of the majority of the joint committee was that inasmuch as it has heretofore been agreed that the possession of a properly equipped shop and being engaged in steam or hot water or wrought iron pipe construction work constituted a master fitter, and inasmuch as master fitters could, under "Trade Resolutions," sell consumers and be "in accord," the manufacturers and jobbers under discussion could sell direct and not be in violation. The joint committee were by no means unanimous in this decision, and it has since occasioned no little comment among our members; however, we have but to report according to the records and facts and leave the subject for the convention to decide.

COMMITTEE MEETINGS.

During the year there have been held at National Headquarters two joint conferences of the Executive Committee and Advisory Council, three meetings of the Executive Committee and one of the Standard Flange and Uniform Contract committees. These were all convened by and with the advice and consent of your national president, and were considered necessary for the good of the association.

The actual traveling expenses of members attending these meetings, being a legitimate charge upon our funds, have been paid by the treasurer.

NATIONAL PRESIDENT "AT HEAD-QUARTERS."

During the month of December National President Crane visited headquarters. He spent some three days acquainting himself with the business methods of the office, and made arrangements to have mailed to him, day by day, copies of the most important letters received or sent out, thus keeping himself thoroughly advised on all association affairs. Having now, as fully as time and circumstances will permit, reported upon all the unfinished business of the last convention, upon all the special instructions given us at

that time, and upon such new matters as have come up during the year, we wish here to thank every one of the officers and members for the cordial support and encouragement extended us during the year; also do we wish to thank our national president and the members of the Advisory Council for the consideration they have given our many and various requests. It affords us unfeigned pleasure to state that they have at all times been in full accord with us, and that all our joint decisions and actions have been singularly unanimous.

We desire to acknowledge the valuable co-operation and courtesy of our national treasurer, not only for his advice and assistance, but also for the prompt manner with which he has at all times responded to our call for funds, without which it would have been impossible to carry on the work laid out for the committee by the last convention.

In resigning the high trust which you confided to us a year ago, allow us to again thank you, each and all, for the courteous consideration which you have ever accorded us. Remembering the many new points we have been called upon to consider and settle, it is a matter of surprise if we have not offended some; if such is the case, we hasten to assure them that it was wholly unintentional, our only object being to conserve the interests of all while protecting the rights of each.

Mr. Wells stated that the Executive Committee would report on other matters in executive session.

Upon motion both reports were received and ordered to be printed.

J. W. Mills moved that a committee be appointed to wait on the National Association of Master Plumbers, then in convention at the Walnut Street Theater, and extend greetings on behalf of the Master Steam and Hot Water Fitters' Association.

The president appointed Chas. J. Gillis and J. W. Mills such committee, and recommended immediate action.

The president then appointed the following committees:

Committee on Trade Relation.

Messrs. Mills, Smith, Curran, Wells, Rutzler, Franklin, Walworth, Buerkel, Thompson, Onderdonk, Gornly, Prentice, Hudson, Simmons, Danforth, Creelman, Rowe, Roberts, Kendrick, Dibble, Sullivan and Borger.

Committee on Constitution and By-Laws.

Messrs. Gillis, Dibble, Hughes and Pope.

Committee on Appeals and Grievances.

Messrs. Ahrens, Sullivan and Doherty.

Committee on Good of the Order.

Messrs. Stratton, Ahrens and Moore.

Committee on Exemptions and House Heating Boiler.

Messrs. Rutzler, Mills and Thompson.

Committee on Official Bulletin.

Messrs. Smith, Walworth and Danforth.

Committee on Uniform Contract.

Messrs. Quay, Franklin and Kendrick.

Committee on Ways and Means.

Messrs. Mills, Williams and Roberts.

Committee on Resolutions.

Messrs. Curran, Mills and Onderdonk.

A. B. Franklin moved that a committee of three be appointed to take up the recommendations made in the president's address, and report at the next session of the convention. The motion was carried, and the president appointed A. B. Franklin, H. Sweeny and W. P. Thompson such committee. Adjournment was then taken until 10 o'clock Friday morning.

FRIDAY MORNING.

By Telegraph.—At 11 o'clock the convention was called to order. The first business was the report of E. D. Smith, treasurer, who made a satisfactory showing of the finances of the association. The amount of cash received from all sources during the year was \$6378, and the expenditures \$5311, leaving a balance in treasury of \$1067 and no outstanding bills. Report received and filed.

D. M. Quay moved a vote of thanks to the officers of the association for their economical and judicious management of the funds. The secretary's report was then read. The report detailed the work of the executive office for the year and gave the number of members in good standing at 349, a large increase over last year. Reports from the vice presidents of State local associations and of unattached members of the National Association, with few exceptions, showed that a good deal of work had been done in the matter of organization and that the condition of affairs in the different districts was very satisfactory. A cable from Nesbitt & Coppings, London, England, was read, conveying the greetings of the firm to the convention assembled and expressing remembrance of last year's hospitality. A cable from A. B. Jenkins was also read announcing his safe arrival in England and expressing his good wishes to all present at the convention. I. L. Wells moved the dispatch of a cable to Mr. Jenkins thanking him for his kindly sentiments and donation of badges. S. I. Pope submitted a resolution for adoption by the convention thanking Mr. and Mrs. Middlebrook for the picture presented to the association. C. Sullivan of New Jersey moved that the convention authorize its incoming Executive Committee to consult with the Executive Committee of the National Association of Master Plumbers for mutual protection in cases where the Baltimore and "Trade Resolutions" have been violated by manufacturers and others who have signed such resolutions. The motion was carried unanimously. The president then appointed the following Committee on Nominations:

J. I. Roberts, St. Paul; A. C. Mercer, New York; H. X. Sweeny, St. Louis; C. S. Onderdonk, Philadelphia; Frank Stratton, Columbus; C. Sullivan, Newark; Samuel I. Pope, Chi-

cago; G. T. Ahrens, Davenport; John Roue, Omaha.

T. B. Cryer of Newark, moved that the Executive Committee be authorized to prepare a suitable certificate of membership, to be furnished yearly to all members in good standing, and the motion was carried. Christopher Branch of St. Louis and C. Sullivan of Newark were added to the Committee on Constitution and By-Laws.

The convention adjourned to meet in the afternoon in executive session.

Pennsylvania Steam Fitters.

A meeting of the steam fitters of Pennsylvania was called to order by State vice-president Wm. P. Thompson in the reading room of the Continental Hotel at noon on Wednesday, for the purpose of effecting a State organization. Harrie D. Crane, president of the Steam and Hot Water Fitters' Association of the United States, and J. L. Wells of the Executive Committee of the national body made addresses on the advantages to be gained for organization, and gave suggestions to aid in the formation of a State association. The meeting then proceeded to the election of officers, when the following were selected:

President, C. S. Onderdonk.

Vice-President, John H. Waters.

Secretary, Harry West.

Treasurer, Wm. P. Thompson.

Among those present were:

H. A. R. Dietrich, Bethlehem.

Geo. F. Steel, Philadelphia.

C. S. Onderdonk, Philadelphia.

P. Gormly, Philadelphia.

N. H. Rand, Philadelphia.

H. W. Nowell, Philadelphia.

J. H. Waters, Johnstown.

W. H. Clark, Reading.

L. T. Rodan, Bristol.

W. S. Germeyer, Carlisle.

Communications signifying that they were in accord were received from the following:

Love Mfg. Company, Corry.

L. Barget, Hanover.

Geo. D. Runk, Clearfield.

H. M. Norton, Easton.

Wm. Kaiser, Wilkes-Barre.

R. B. Vaughn, Kingston.

Cribbs & Hill, DuBois.

Raymond & Campbell Mfg. Co., Middletown.

David R. Burns, Philadelphia.

H. B. Campbell, Middletown.

H. B. Peacock, Easton.

Fred Sackett, Clearfield.

B. C. Floyd, Shamokin.

Gross, Fritzenger & Co., Slatington.

W. A. Heckman, Reading.

W. M. Weitzel, Lititz.

S. W. Barnes & Son, Philadelphia.

D. Bergman, Pittsburgh.

Geo. T. Bailey, La Plume.

Johnson Machine Company, Uniontown.

John Fitz, Hanover.

S. W. Howe, Pittsburgh.

Hempel Bros., Reynoldsville.

Mt. Joy Steam Heating Company, Mt. Joy.

J. B. Sheriff Mfg. Company, Pittsburgh.

John W. Graves, Saltsburg.

Munden & Addy, Allegheny City.

Smith & Walker Hardware Company, Kane.

Streep & Roop, Doylestown.

John W. Addy, Pittsburgh.

Geo. W. Moore, Waynesboro.

J. B. Weiser, Williamsport.
Wm. McCashin, Connellsville.
Gunster & Forsyth, Scranton, Pa.
Sparks & Parker, Pottsville.
Thompson Bros., Philadelphia.
N. F. Drumbeller, Lansford.
John Gormly, Philadelphia.
L. B. Ardrey & Sons, Bristol.
Joseph Leckner, Danville.
W. A. Holmes, Bloomsburg.
Hunt & Connell Company, Scranton.
W. P. Connell & Sons, Scranton.

On motion of Wm. P. Thompson a committee was appointed by the president, consisting of Wm. P. Thompson, P. Gormly and H. W. Nowell, to draft a constitution and by-laws for the association.

After an explanation of the schedule of dues the members' present paid the treasurer and the meeting adjourned to meet again at 1 p.m. Thursday.

A meeting of the Pennsylvania State Association of Steam Fitters was held on Thursday afternoon, and after reading the minutes W. P. Thompson, chairman of the Committee on Constitution, reported that the National Association was making provision to supply a suitable set of State by-laws and in consequence the committee reported progress, after which the meeting adjourned to meet at the call of the president.

Fittings.

JUDSON A. GOODRICH could have been elected to any office in either association by the unanimous vote of delegates, manufacturers and salesmen. He holds the cash box of the American Society of Heating and Ventilating Engineers.

PHOTOGRAPHS of the Niagara radiators were given out by Walter Pendleton of the New York branch of the Niagara Radiator Company, Buffalo, N. Y., with an invitation to call at Parlor 5 and see their new two-column 6-inch wide Niagara radiator and their new pin indirect radiator.

JOHN LEITCH of 206 Centre street, New York, showed photographs of the Standard radiators made by the Standard Radiator Company, Buffalo, N. Y., and greeted many old and new friends.

W. H. HILL, from the New York office of the American Radiator Company, Chicago, arrived on Wednesday and was greeted by the delegates from all sections.

THE GEO. P. STEEL IRON COMPANY, Philadelphia, showed their new steam boiler in their parlor, where the delegates were welcomed by Geo. P. Steel and Canby Steel.

EDWARD L. ROSS represented the Chapman Valve Company, Indian Orchard, Mass., and had a busy time with the delegates.

M. J. HANNA talked the Dunning Club boiler, made by the New York Central Iron Works, with a pleasing effect, to many strangers.

THOMAS B. MASON showed a radiator truck for F. S. Katzenbach & Co., Trenton, N. J. The truck has rubber tired wheels supporting an adjustable cast iron frame, which can be quickly attached to the radiator.

GEORGE E. DOWNE of the Ideal Boiler Company, Chicago, was known to all the delegates and tradesmen.

W. M. MACKAY, New York, represented the Royal line of steam and hot water boilers in his usual style, and was an old acquaintance with most of those in attendance.

ALEX. T. HENDERSON of the United States Heater Company, Detroit, Mich., is a Capitol talker on both steam and hot water heating. Their line of heating apparatus has been satisfactorily tested by many of their patrons.

D. R. McCALLUM of the New York office of the J. H. McLain Company, Canton, Ohio, is a well-known steam and hot water expert to all the Western delegates.

H. H. LINDEMUTH talked the New Sun steam and hot water line of apparatus that is being put on the market by Broomell, Schmidt & Co., York, Pa.

PIPE, FITTINGS AND SUPPLIES, the specialties of McMann & Taylor, New York, were agreeably represented by Frank A. Boose, who has a long acquaintance with the trade.

SECRETARY E. F. GARTZ of the Crane Company, Chicago, was familiarly greeted by the users of steam and water fittings.

C. F. WALTHER of the Niagara Radiator Company, Buffalo, interested the steam fitters in his new radiators.

CAPT. D. PAUL HUGHES of the Standard Radiator Company, Buffalo, N. Y., needed no introducing to the delegates and had a greeting for all. J. B. Hughes of St. Louis is an old friend, and being of the same name claims to be a brother when the sun shines, but no connection whatever in storms.

THE ST. LOUIS RADIATOR COMPANY, St. Louis, were represented by Clark Thoms.

COL. E. N. SQUIRES, secretary of the New York Central Iron Works, Geneva, N. Y., left a lasting impression for the Dunning boilers on the delegates by distributing a souvenir, "Scratch your head and pencil the order for a Dunning," on a neat morocco case containing a convenient comb and a lead pencil.

A NEW CATALOGUE in colors, with a cover design in the Beardsley style of art, was distributed by the New York manager, D. R. McCallum of the J. H. McLain Company, Canton, Ohio. It showed the Humber, Harvard, Cambridge, Amherst, Cornell, Princeton, Yale and Rugby boilers in tinted ink, with the text in colored ink.

THE AMERICAN RADIATOR COMPANY, Chicago, had a parlor where the guests of the convention were received by Treasurer Chas. H. Hodges of Chicago, Major E. R. Pierce of Boston, Frank A. Brastow, Philadelphia, and W. H. Hill, New York, where they invited all to inspect their new Varona radiator on exhibition at their office, 506 Arch street.

O. CHAN. WELLS of the Wells & Coutan Company, Limited, New York, makers of gauges for all purposes, was one of the jolly attendants at the convention, and distributed a *fac-simile* of a steam gauge in cardboard.

A. G. PAUL of the Paul Steam Heating System of Boston found the convention a field for labor.

THE MODEL HEATING COMPANY, Philadelphia, had parlors where A. C. Edgar, M. B. Moore, J. P. Ley, C. W. Sisson, E. E. Barto, Homer Addams, and President A. C. Mott of Philadelphia, W. A. Russell, New York, and J. J. Wilson, Baltimore, distributed gold plated souvenirs representing a section of their boiler.

THE BRISLIN-SHEBLE MFG. COMPANY, St. Louis, Mo., exhibited a combination floor and ceiling plate for pipe fitting, adapted for the use of sheet iron extension tubes.

J. D. STILES of Jenkins Bros., New York, arrived at the Continental on Thursday,

and his fame among the fitters is only second to the fame of the Jenkins valves.

J. P. SCHAFFER, Pittsburgh, and S. C. Smith visited the steam fitters' convention.

THE ST. LOUIS DELEGATION came in a special car carrying Secretary F. McIntire, who chaperoned 12 others.

THE DELAMATER IRON WORKS, New York, distributed catalogues of their hot air pumping engines.

E. M. BOSLEY, St. Louis, circulated sheets illustrating the Incandescent super-heating steam boiler.

THE BEATON & CORBIN MFG. COMPANY, Southington, Conn., distributed Japanese fans bearing cuts of their ceiling and floor plates.

JAMES J. LAWLOR of Lawlor Water Feed & Damper Regulator Company, New York, mingled with the delegates, interesting them in his line.

J. P. SHOOP, Canton, Ohio, was one of the representatives of the H. B. Smith Company, Westfield, Mass., who left Cottage boiler and Union radiator talk out of his conversation.

CHAS. MORRISON had to answer many questions about the new boiler of the Gurney Heater Mfg. Company, Boston, Mass.

THE EATON, COLE & BURNHAM COMPANY, New York, were ably represented by Geo. E. Walton, who was as well known as the valves, tools and fittings made by the house.

THE FULLER & WARREN COMPANY, Troy, N. Y., were represented by David Miller of New York, and many plumbers who use furnaces and boilers greeted him cordially.

JAMES THOMPSON talked range boilers for R. B. Guyan & Co., Philadelphia.

J. D. MURPHY had a word to say for the supply house of John Maneely, Philadelphia.

THOMAS E. CRONE, second vice-president of the American Boiler Company, Chicago, came over from his New York office and aided W. H. Peterson of the Philadelphia office, 28 North Fifth street, in extending greeting to the delegates.

A. WYCKOFF & SON, Elmira, N. Y., exhibited a zinc lined pipe covering for steam pipes that attracted a great deal of attention.

W. S. NEWKIRK, New York, presented a card bearing a cut of the boiler of the United States Heater Company, Detroit, Mich.

GEO. E. BOYLSTON, secretary and treasurer of the Chicago Engineer Supply Company, Chicago, had a busy time with old and new acquaintances.

THE JOHNSON ELECTRIC SERVICE COMPANY, Milwaukee, had a full working exhibition of their system of heat regulation in their parlor and attracted many guests.

E. FOSTER came over from New York and represented the Electric Heat Regulator Company of Minneapolis, making the operation of their system of heat regulation clear to all who were interested.

"ITS A GOOD THING—ADHERE TO IT!"—Surrounding the Jenkins trade-mark was this inscription in gilt on a little leather case filled with court plaster, distributed by J. D. Stiles, the representative of Jenkins Bros., New York, the valve manufacturers.

T. G. HEYWOOD of the Chicago house of the Niagara Radiator Company, Buffalo, N. Y., met a lively reception on his arrival.

HEATING NOTES.

EDWARD P. BATES, Syracuse, N. Y., is prepared to furnish the schedule of standard flanges at a small price. This schedule was prepared by a committee of the American Society of Mechanical Engineers, the Master Steam and Hot Water Fitters' Association and a committee of the leading valve and fittings manufacturers of the United States. It is printed on heavy cardbord 18 x 24 inches, with the diameters, sizes of bolts, number of bolt holes, radius of bolt circle, thickness of flanges and other valuable information. On the reverse side of the card is a full size drawing of flanges to 10 inches in diameter, showing bolt holes, &c.

THE STANDARD RADIATOR COMPANY, Buffalo, N. Y., issue new circulars of their well-known line of radiator goods. The trade will be particularly interested to learn that these goods are now known under the name of the Buffalo Standard. The circulars show the Buffalo Standard single loop, regular loop, four-column, direct-indirect and single column radiators, all for steam or water. The half-tone illustrations are set off by decorative vignettes printed in light color, and with each illustration are given particulars of sizes, &c. The different circulars are printed in various colors, giving a variety of effect.

A EUROPEAN EXCHANGE mentions that a house indifferent to thermal variations has lately been erected at Chamounix, Switzerland. This structure is built on a tubular framework, with a constant circulation of water forming a heat radiator of wide surface during the winter and cold radiator in summer, and at the same time a water conduit.

THE WEBSTER CITY HOT WATER HEATING COMPANY have been incorporated at Algona, Iowa, with a capital stock of \$50,000, to manufacture hot water heating apparatus.

F. W. JAQUI, the heating engineer, represents the Thatcher Furnace Company of 240 Water street, New York, in New York City, Brooklyn, Jersey City and in New York State generally, including Long Island.

A NEW NON-CONDUCTING COVERING for steam pipes has lately been introduced by an English firm—R. M. Morr & Co. of London. The pipes are covered with a fabric made of large reeds laced together into mats, a layer of fossil meal being placed both below and over the reeds. The reeds form an air space in which, it is claimed, there are no connective currents.

A SMALL OBLONG PAMPHLET issued by the Belknap Mfg. Co., Bridgeport, Conn., calls attention to radiator goods, of which they are making specialties. The first article is the Belknap hot water valve, which is illustrated, and its merits are summarized under three general headings, which will be read with interest by those who have use for such goods. The extra heavy Jenkins radiator valves follow, and at the close are illustrations of radiator union elbows and radiator air valves. Full price-lists, tables of sizes, &c., are given. The title to the pamphlet consists of the word "Belknap," the first syllable being represented by a small illustration of the old Liberty Bell.

THE LATEST OF THE CATALOGUES relating to Richmond steam and hot water heaters is that issued in the interest of Isaac Coffin & Co., 52 Sudbury street, Boston, Mass. It is a neat round cornered pamphlet bound in green paper, containing 40 pages, 30 of which are given up to general and sectional illustrations, together with de-

scriptive particulars and tables of prices and sizes, while the rest of the pamphlet gives testimonial letters from many different sources, as well as some four pages of references from Boston and vicinity.

E. N. GATES, manager of the Diamond Boiler Company, Holliston, Mass., is spending two weeks at the company's foundry at Canton, Ohio. Mr. Gates calls on the trade both going and returning, traveling by different routes each way. The boilers of this concern now ready are Nos. 16, 19, 23 and 32, while Nos. 27, 38 and 48 will soon be ready. We understand that they are placing their agencies very satisfactorily.

THE AMERICAN BOILER COMPANY, 94 Centre street, New York, and 84 Lake street, Chicago, are distributing elegantly printed reproductions of the medal received by them at Belgium's World's Fair, Antwerp, 1894, where they were awarded highest honors. The obverse bears a vignette of King Leopold II, the reverse a partial view of Antwerp, over which is the globe, encircled by a band inclosing an olive branch. A copy of the circular is also at hand, which the company have issued addressed to the "gentlemen of the convention." It is an extremely forcible presentation of the claims of the American Boiler Company for the business of those who install house heating apparatus.

A DISPATCH from Chicago announces that the Crane Company of that city, who are among the largest manufacturers of pipe fittings and brass goods, have granted an increase of 10 per cent. in the wages of their 2300 employees.

F. G. WEBBER, representing the Fowler Radiator and Mfg. Company, has established in business at 88 Lake street, Chicago.

THE A. A. GRIFFING IRON COMPANY, Jersey City, N. J., have moved their New York office to the corner of Centre and Worth streets. Here they have taken a large building and have fitted up a handsome showroom.

Association of English Plumbers.

According to the English papers a large and representative meeting of the master plumbers of England was held at the Queen's Hotel, Leeds, May 22.

It resulted in the establishment of the National Association of Master Plumbers. The following officers were elected. President, H. Lightfoot, Manchester; vice-presidents, A. E. Biggs, Leicester; J. Lindley, Sr. Leeds; R. W. Cooke, Newcastle; E. Flewitt, Nottingham; J. B. Corrie, Sheffield; and R. P. Stafford, Halifax; treasurer, W. Jaffrey, Manchester. The purposes of the organization as recorded in the English papers are summed up under the following heads: 1. To raise generally the status of plumbers throughout the country. 2. To take steps to prevent the great bulk of contract work being done at unremunerative prices. 3. To unite in a federation of master plumbers. 4. To mutually protect each other and act in concert for the protection of the trade. 5. To support each other in cases of strikes or labor disputes. 6. To confine plumbers' work to plumbers and prevent merchants and manufacturers from supplying goods direct to the customers. 7. To bring about, if possible, improvements in the system of contracting.

TIN PLATES.

Summer Shut Downs.

Welsh tin plate manufacturers appear to be taking some comfort to their souls from the hope that "a hot summer in the United States will throw the American works out of gear." "Climatically," they urge, "South Wales has great advantages over America in tin plate manufacture." South Wales and Great Britain generally possess a similar "climatic advantage" over America in connection with all lines of iron and steel manufacture. Yet this fact has not served to restrict American production in those lines. Nor do we think that our unfortunate failure in the matter of climate will exercise any very depressing influence on the American tin plate industry. It is likely that a shut down of two or three weeks during the heated term may be necessary. But this is only usual. A brief closing of the works is found advisable in most cases in order to give opportunity for a general overhauling of machinery and the carrying out of small repairs, as well as to give some rest to the workmen. Judging, however, from the crowded condition of the order books in most of the domestic tin plate mills at present, no prolonged shut down will be undertaken this year unless extraordinary heat or other unlooked for cause should make such action imperative. Already some manufacturers have withdrawn quotations and many report their works full with orders until the close of the month of August, and they signify their intention of running right along until that time. The heat of the weather is less likely to cause involuntary shut downs among the American works this summer than is the rise in steel prices and the difficulty, now beginning to be felt, in getting tin plate bars. These causes are the ones which give anxiety to the tin plate makers just now.

SCRAP.

THE CAMBRIDGE CITY PUNCH, SHEAR & ROLL COMPANY, Richmond, Ind., have recently delivered one of their duplex direct acting power shears to the works of the American Tin Plate Company, Elwood, Ind. The Cambridge City Company are now engaged on drawings and patterns for an order of several special machines for the same concern.

THE *Newcastle Chronicle* of Newcastle, England, states that an iron and tin plate factory is to be started at Birtley, in the same district, by the northern co-operative societies. It is not clear whether this announcement means that tin plate mills are to be started or whether merely tin plate factories for the manufacture of tinware are intended, probably the latter.

THE TIN PLATE WORKMEN in the Llanelly tin mills, who some time ago severed their connection with the Tin Plate Union, have now returned to the union fold.

THE ELWOOD BOX FACTORY, Elwood, Ind., which manufactures boxes for the

American Tin Plate Company of that place, has been obliged to work overtime to fill orders, the demand for tin plate boxes being exceedingly large at the present time.

THE MANAGEMENT of the National Tin Plate Works, now being built at Anderson, Ind., have placed an order for two more tin mills in addition to the four mill plant now in course of construction. It is the declared intention of the company to put the entire plant in operation by September 1.

IN DISCUSSING the Canadian tin plate outlook a writer in *The Hardware and Metal Merchant* of Montreal comes to the conclusion that as American iron has driven British iron out of the Dominion the operation is likely to be repeated in the future in the case of tin plate also.

ALL THE COMPANIES making a specialty of the manufacture of tin plate machinery report that a remarkable drive in this line is now being experienced by them.

THE TIN PLATE WORKS of the Laughlin Nail Company, Martin's Ferry, Ohio, were compelled to close down for a short time last week on account of the difficulty of obtaining sufficient steel. This drawback has been experienced by a number of tin plate works recently. It is stated that the inconvenience will shortly be removed by the increased production now taking place among the steel mills.

THE NEW TIN PLATE PLANT of the La Belle Iron Works, Wheeling, W. Va., has been put in operation, the start being as successful as anticipated. It was found necessary to make some slight changes, but these required only a day or two, and the plant is again in full operation. The concern have quite a number of orders on hand. The equipment for this plant was furnished by Leechburg Foundry & Machine Company of Pittsburgh, the erection being under the superintendence of Ambrose Beard.

A DISPATCH from Braddock, Pa., states that the light rail mill of the Edgar Thomson plant at that place, owned and operated by the Carnegie Company, will be rebuilt at once as a tin plate mill. The plant, it is said, will be ready for operation in less than a month.

THE LEECHBURG FOUNDRY & MACHINE COMPANY, Pittsburgh, Pa., have received an order for a Meata pickling machine for the new tin plate plant of the Stickney Iron Company, Baltimore, Md.

WORK is actively progressing on the new buildings for the extension of the tin plate plant of the New Castle Steel & Tin Plate Company, New Castle, Pa. Four large boilers furnished by the Bess Foundry & Machine Company, Fort Wayne, Ind., are now being placed in position.

THE IRONDALE STEEL & IRON COMPANY, Middletown, Ind., have lately started two extra mills in connection with their tin plate plant. The com-

pany's working force has been increased by about 250.

CABLE ADVICES indicate that further strikes are expected in the Welsh tin plate manufacturing districts which are likely to hamper the business of the manufacturers next month.

IN THE INTERESTING SERIES of ARTICLES on "The Tin Plate Industry in the United States," now running in the *London Engineer*, a table of American tin plate works and brands is given in the issue of that journal for May 31. This exhibit is a reproduction of the quarterly list printed in *The Metal Worker* of April 6. The names of three concerns, however, are added, which were not given in our table, namely, the Illinois Steel Company, the New Kensington Tin Plate Company and the Stickney Iron Company, which names, the writer of the article states, were procured from another source. These concerns were not included in our quarterly list for April because the Illinois Steel Company informed us that they were not in the business of tin plate manufacture and had no present intention of embarking therein. Moreover, there is no such concern in existence as the New Kensington Tin Plate Company. Probably this title was intended for the concern known as the Pennsylvania Tin Plate Company, of New Kensington, Pa., which was included in our list. The Stickney Iron Company were not included because at that time they had not actually begun their preparations for manufacturing tin plates.

BRITISH BOARD OF TRADE returns for May show that during the month the total exports of tin and terne plates from Great Britain were 33,000 tons, against 30,000 tons in May, 1894. Of this amount 18,000 tons were sent to the United States, against 21,291 tons in the corresponding month of last year and nearly 16,000 tons in April, 1895. The total shipments of tin and terne plates to this country for the first five months of the year have been 94,500 tons, against 83,000 tons in the same period of last year. The following table shows the total exports of tin plate from Great Britain to the United States for the past five years, in tons of 2240 pounds:

	1895.	1894.	1893.	1892.	1891.
January.....	18,839	18,346	22,498	17,534	32,018
February.....	23,201	13,413	20,190	22,208	28,253
March.....	18,733	16,907	31,334	22,789	28,638
April.....	1,946	33,210	31,651	31,061	45,248
May.....	18,000	21,311	29,983	25,799	55,349
June.....	17,247	29,759	23,550	63,539	
July.....	17,865	22,248	24,750	4,323	
August.....	19,125	15,784	24,221	5,629	
September.....	17,672	13,749	22,593	11,139	
October.....	24,854	13,861	19,961	12,461	
November.....	22,382	15,493	20,634	14,831	
December.....	21,677	14,691	23,417	15,536	
Totals	94,516	226,879	255,583	276,479	325,145

PRESIDENT FLORIAN GROSJEAN of Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, has just returned from a trip to Harrisburg, Pa., where preparations are being made for at once starting up the company's black plate mills located at that place, and which have been idle for some months. The new tinning department will also be ready for operation within a short

period. The buildings are completed and the tinning sets and appliances have been received and are now being placed in position. Space is provided for 16 sets, and a beginning will be made, experimentally, with four Elwood pots. The works will give employment to about 300 men.

THE DIFFICULTY recently experienced by many domestic tin plate works in obtaining a prompt and sufficient supply of bars for their purposes seems likely to result in the addition of bar mills to a number of the existing tin plate plants. More than one tin plate manufacturing concern is now understood to be figuring on the cost of building such mills and, in at least two cases, the mills have been contracted for and the work thereon has already commenced. It looks as if, in the up to date American tin plate works of the future, a bar mill will be considered an indispensable adjunct.

THE LA BELLE IRON WORKS, Wheeling, W. Va., have given a contract to the H. S. Sands Electric & Mfg. Company for the installation of a new electric light and power plant in the tin plate works just completed and put in operation by the La Belle Iron Works. There will be one generator to furnish light for 20 arc lights and 200 incandescent lights, a power dynamo for driving motors, one motor for the tin plate mill and one to drive large lathe, also motors for the shears and a large electric travelling crane.

THE BELLAIRE NAIL WORKS COMPANY of Bellaire, Ohio, have commenced the erection of a new tin plate works and large sheet and bar mill, which will cost in the neighborhood of \$300,000.

HEATING AND PLUMBING.

NEW WORK AND CONTRACTS.

THE BID of Gaylord & Eitapence for steam heating and ventilating the City Hospital, Binghamton, N. Y., has been accepted, the price being \$1873. David J. Malone obtained the plumbing contract for the same building for \$1097.

PROPOSALS are asked for, until June 19, for heating and ventilating the High School Building, at Cleveland, Ohio.

HENRY WILLARD, Milford, Mass., has been awarded the contract for putting in the heating apparatus in the new Congregational Church at Franklin.

THE COUNTY COMMISSIONERS have contracted with James H. McPartland of Houlton to put in the plumbing and heating apparatus in the addition to the Court House, and have employed Chas. A. Swett to superintend the work.

FOSTER BROS., Danbury, Conn., are getting out plans for a double house on Pearl street for Dr. Wm. Bulkeley, and will have furnace heat and modern improvements.

C. B. FINCH has recently started in as a plumber in West Haven, Conn., and has the contract for plumbing the new house on Richards place for Albert Siebold.

OVER A CARLOAD of Exeter radiators are being used in the Convent of Mercy, Providence, R. I., by Lynch & Woodward, heating contractors, of Boston. The Hotel Plaza, at Boston, which is being heated by Ingalls & Kendrick, is also being supplied with Exeter ornamental steam radiators, 123 being used.

SEALED PROPOSALS will be received at the office of the Supervising Architect, Washington, D. C., until June 26, for a low pressure, return circulation, steam heating and ventilating apparatus for the United States Post Office Building, at Burlington, Iowa, in accordance with drawings and specifications, which may be ob-

tained at the office of the superintendent at Burlington or from the Supervising Architect, Washington.

IT IS REPORTED that the Maine World's Fair Building, now being erected at Poland Springs, will have the most complete and elaborate system of plumbing of any structure in Maine.

H. E. BOTTUM, Coboes, N. Y., has the contract for tinning the roof of the car house of the Coboes City Railway Company and for the plumbing and steam heating on the Island schoolhouse.

THE COOPERSTOWN, N. Y., Union school district has voted \$8000 to build an addition to the present school building and to provide an efficient system of steam heating and ventilation.

THE BOARD OF DIRECTORS of the Wisconsin Veterans' Home, Waupaca, Wis., at its meeting June 5 adopted the plans of J. E. Brennan of the Lindemann & Hoverson Company for a central plant to furnish heat, light, water power and fire pumps. Lines are to be laid under ground to the six principal buildings, with a 160 horse power engine. The work, it is estimated, will cost \$10,000.

THE WELLS-NEWTON QUAY COMPANY, 237 and 238 Monadnock Block, Chicago, are to overhaul the steam heating plant in the Reaper Block, Washington and Clark streets.

J. J. WADE & SON, 276 Dearborn street, Chicago, have contracts for the plumbing, gas fitting and sewerage in the Atwood Building, Clark and Madison streets; J. D. Marshall Building, Hobie street and Hawthorne avenue, and in the two residences of C. L. Willey, Thirty-seventh street and Michigan avenue.

CHARLES C. BREYER, 187 West Division street, Chicago, has the contract for the plumbing and drainage in the residence of G. F. Mahler, 802 West Division street.

F. EICHENBAUM, 815 Armitage avenue, Chicago, is to do the plumbing and drainage in the residence of A. Jones, 306 Fullerton avenue.

WILLIAM READ, 345 Forty-second street, Chicago, has the contract for the plumbing and drainage in the flat building of A. Eckerman, 5266 Bishop street.

P. H. GUNDERMANN, 889 North Halsted street, Chicago, is to do the plumbing and drainage in the flat building of C. Lippman, 186 Centre street.

HARRIS BROS., 3239 State street, Chicago, have the contract for the plumbing and drainage in the flat building of Thomas Kelly, Thirty-fifth street and Washtenaw avenue.

J. E. HEDMAN, 656 West Division street, Chicago, is to do the plumbing and drainage in the flat building of M. Anderson, 265 Hirsh street.

PAUL JAEKKE, 42 Centre street, Chicago, has the contract for the plumbing and drainage in the flat building of J. Mau, Irving and Byron avenues.

KEEF & WARNOCK, 1105 Lincoln avenue, Chicago, are to do the plumbing and drainage in the flat building of M. Schroeter, Belle Plaine avenue.

SMITH & DORNEY, 1046 Northwestern avenue, Chicago, have the contract for the plumbing and drainage in the flat building of J. Mills, Lawndale and Wabansia avenues.

CHARLES WALTERS, 332 Blue Island avenue, Chicago, is to do the plumbing and drainage in the flat building of L. Reichardt, 930 South Lawndale avenue.

JOSEPH SCHEUR, 924 Lincoln avenue, Chicago, has the contract for the plumbing and drainage in the flat building of W. Mooney, 620 Seminary avenue.

E. HENNESSY & CO., 3251 State street, Chicago, are to do the plumbing and drainage in the residence of H. Schulenberg, 3623 Forest avenue.

WILLIAM S. VERITY, 229 West Randolph street, Chicago, is to do the plumbing and drainage in the three residences of S. Brown, 508 Oakdale avenue, 537 Nelson avenue and 117 Cosgrove avenue.

PETER FELTMAN, 1149 Lincoln avenue, Chicago, is to do the plumbing and drainage in the flat building of T. Frelbrandt, 650 Melrose street.

B. G. CARPENTER & CO. have been awarded the contract for heating and ventilating the new school at Kingston, Pa.

BIDS will be received at the office of the Custodian of the United States Custom House and Post Office at Gloucester, Mass., until June 26, for work, including the plumbing of the above named building. Specifications may be had at the Custodian's office.

ARCHITECT E. HILL TURNOCK, 110 Randolph street, Chicago, Ill., has completed plans for the Lincoln Park Palace Apartment Building for B. Edwards, publisher, Chicago. This handsome structure will be built of solid Jasper stone, nine stories in height and fire proof throughout. It will contain all the latest improvements and will be up to date in every particular. The Star lead pipe couplers, manufactured by the Star Coupler Company, St. Louis, have been specified and will be used in the entire lead and iron pipe plumbing in this building. The Star Coupler Company are justly proud of having secured this contract, especially as it is taken away from home, and expect to follow this with a number of other large buildings in the same city.

Le Genie Civil of Paris states that during the last winter, which was a season of exceptional severity throughout Europe, the railroads of Germany placed in operation a number of freight cars furnished with a heating system designed to counteract the effects of frost on the perishable products transported by them. On many former occasions when the temperature was exceptionally low, such freight had been entirely spoiled in spite of the most careful attention. In order to obviate such an accident the companies introduced cars furnished with a double wall between which circulated warm air obtained from a heater connected with the car. A thermometer in full view from the outside secured a complete control of the temperature in the interior of the car. The cars thus equipped were placed in service on the railroad which connects Coblenz and Wiesbaden with Berlin, and they made a weekly trip each way from December 4 until the end of February, 1895, during which time they carried, in excellent condition, such perishable commodities as flowers, vegetables, fruit, beer, wine, mineral waters, &c.

Governor Morton of New York has signed a bill passed by the State Legislature authorizing cities of the first class to make contracts with private corporations to furnish gas. The bill applies to New York, Brooklyn and Buffalo.

The *Australasian Ironmonger* says that some amusement has been caused in technical circles during the month by the publication in the daily papers of New Zealand of a paragraph seriously describing the prospects of the manufacture of aluminum from extensive deposits of ore found in the neighborhood of Albury, said to contain an unusually large proportion of the oxide. The estimated cost of the machinery required is \$2500 and it is expected that 60 pounds to 70 pounds of metal can then be produced per day; but the basis of the enterprise is that the wholesale price of aluminum is reckoned at about 50 cents per ounce, the retail market price being about \$1. As a matter of fact, aluminum in Australia is worth between 50 and 75 cents per pound.

Bonds of the Allegheny Valley Railroad, bearing 5 per cent. interest, and issued at 104, were underwritten to the amount of \$43,000,000 in London and \$5,000,000 in New York.

STOVE TRADE NOTES.

The Ohio Stove Trade.

Taken all in all the situation of manufacturers of stoves and ranges is encouraging, if not entirely satisfactory. A few founders in this section write that trade is increasing and that orders thus far are larger than at the corresponding time a year ago, but the majority note a very quiet period, in some instances leaving very much to be desired. Most of the advices received, however, were written during the prevalence of the heated spell of almost unendurable weather, but the recent rains and lower temperature have materially changed the situation. As far as the business outlook depends upon the crops, and at present they form the key to the situation, there is no reason to feel discouragement. As far as heard from there is not a manufacturer, not making repairs, who is not running full time and employing a full quota of men. In fact, founders show full faith in the present and the future, in getting out new lines of goods or improving and changing old patterns to meet the growing demands of the trade.

Even if the volume of new business is not flattering now, dealers and producers alike are receiving more inquiries concerning goods and prices, which encourages a hopeful feeling. The one drawback to the realization of a profitable season to the manufacturer, which has been referred to before, is the apparent indisposition among some producers to harmonize views. Raw material, fuel and iron especially, have and still are advancing, labor is being paid full wages, if not higher compensation, resulting in higher cost of the finished product, which must eventually result in higher selling prices. There is some complaint, however, that lower prices are being talked of, which action some manufacturers complain is hard to reconcile with the facts. The general impression, however, is that higher prices will be established soon as a natural adjustment to the new condition being developed.

The activity and strength in the market for pig iron, including both Northern and Southern output, is a most interesting and important feature at the moment.

SOME of the gas range manufacturers held a meeting in Toledo, Ohio, on June 5, for the purpose of talking over trade matters in their special line. It was a meeting very similar in character to those frequently held by stove manufacturers, and it was decided to hold another meeting in the near future. It

will probably take place in Cleveland, Ohio, the latter part of this month or early in July, when it is expected that representatives of nearly all the gas range makers will be in attendance.

ODD PLATES.

THE R. E. DIETZ COMPANY, with main office and factory at Greenwich and Light streets, New York City, have issued an exceedingly neat little pamphlet of pocket size relating to their leading specialties. While the greater portion of the pamphlet is devoted to the Dietz Standard tubular lamps and lanterns, a number of pages refer to the Dietz tubular oil stoves adapted for heating as well as cooking purposes. These stoves, we understand, have been greatly improved since they were first introduced and are now fitted with the company's improved patent burner, having cemented joints which facilitate operation, and the filler opening is arranged so that the oil can be seen. A removable extension shelf is so made that it can be placed at either side, and there is employed a new method of securing the burner plate to the oil chamber with packing underneath. The stoves are made of cast iron, and the construction of the burners and oil chambers is such that they can be easily replaced at small expense whenever required. The Dietz tubular oil stoves are made in several varieties, and are referred to as burning kerosene without smoke or odor. The Dietz No. 4 tubular radiator is of unique design and of such capacity that, it is claimed, it will comfortably warm a room 20 feet square in the coldest weather. It is 21 inches long, 14 inches wide and 30 inches high and has four 4-inch burners. The oil chamber holds 5 quarts of oil, which is claimed to be sufficient to burn ten or twelve hours. The Dietz No. 4 tubular parlor heater is another ornamental construction especially adapted for parlors, offices or conservatories. It has a mica door, which is removable, leaving an opening for a kettle. This stove is also provided with four 4-inch burners. The Dietz new double cylinder gas heater is made in three sizes and is referred to as very powerful in operation.

WE HAVE BEFORE US a copy of a very attractive publication entitled "Headlight," devoted to the interests of railroads and railroad centers, and issued by the Chicago Photo-Engraving Company. It is designated as the "Albion Edition" and contains interesting reference to the leading industries in and about that place. Several pages are devoted to a description of the plant of the Electric Oil Stove Company of Homer, Mich., interior views being presented of the testing room, tin and sheet iron room, shipping department and brass workers' department, as well as a general view of the office and works of the company. General and broken views of the Electric heater and Electric cook stove, together with portraits of the various members of the company, are likewise presented. The statement is made that the business

of the Electric Oil Stove Company is rapidly increasing and that large shipments are annually made to European countries.

THE DIGHTON FURNACE COMPANY of North Dighton, Mass., have issued an illustrated pamphlet of the Winthrop wrought iron furnace and the Winthrop combination heater. The goods are illustrated by means of sectional views and the descriptive text covers the essential features of construction. The makers state that the Winthrop wrought iron furnace is the result of close observation and careful study and in presenting it to the public they do so with full confidence in its merits. It is constructed of the best material and by experienced workmen. Illustrations are given of the grate section of the furnace, showing the Smyth triangular grate; also the Winthrop check damper for smoke pipe. Several pages are given to testimonial letters from some of those who have used the company's goods, the illustrations consisting of buildings heated by the Winthrop furnace.

WE HAVE RECEIVED from Clerkin & Maag of Akron, Ohio, a little pamphlet illustrating and describing what is known as the Twentieth Century furnace. This is a new construction, having been patented in December of last year. The heater is so made that a hot blast is provided to all the fuel and gases without the use of complicated attachments. The manufacturers state that the fire pot is cast in one piece, having cells and slots entirely around it so that the air before mingling with the fuel is thoroughly heated, while at the same time the gases are set free. The arrangement is also such that air passes up through cells, where it becomes properly heated, "consuming the gases and volatile products of combustion." The ash pit is large and all parts of the grate can be put in position or taken out through the ash pit door. The grate is of the shaking and draw center type, made in two pieces, while the grate rest is in the form of a three-legged stool, bolted at three points of the ash pit, thus preventing sagging. The radiator of the furnace is corrugated in form and self cleaning. The bottom is pitched to an angle of 45 degrees, so that no ashes and soot can lodge at any point of its heating surface. A self cleaning two-way diving flue is bolted on the outside of the radiator and inside of the casing. It is made of cast iron, and being outside of the radiator the claim is made that it will not burn out, while being inside the casing the full benefit of its heating surface is given to circulation.

THE CENTURY STOVE COMPANY of Dighton, Mass., have issued from the press a neat little catalogue illustrating some of their specialties in the way of parlor stoves and ranges. They are also sending out a supplement showing their latest productions. Among these is the Century Grand, a six-hole range of attractive embellishment and embodying the modern features. Under the name Our Century the company are offering a first-class medium priced six-hole

range of rich ornamentation. The manufacturers state that this stove has many improvements not found in the higher constructions. Under the name Century the company are offering a neat square parlor stove made in two sizes. Under the same name they make three sizes of a sheet iron cylinder surface burner having draw center grate, anti clinker door, fancy side panels, &c. The Gem Century is another sheet iron cylinder surface burner, made in three sizes, while the Coral is a round parlor heater which is meeting with a large sale.

THE BAXTER STOVE COMPANY of Mansfield, Ohio, have issued a very neat supplement containing illustrations of their Banner steel range, which is offered in five different styles. This stove is one of the latest additions to the company's assortment and embodies features which cannot fail to interest the trade. It has balanced oven doors, duplex grate for hard coal and shaking and draw center grate for soft coal; oven bottom made of No. 10 steel, and so fastened in place that it can be readily taken out and replaced; end shelf, &c. We also have from the company a circular illustrating the Regal Banner, which is referred to as a new departure in wood cook stoves. The ornamental features are attractive, and the stove is made with balanced oven doors which when open give a large and substantial shelf on a level with the oven bottom. The stove is offered in three sizes and the usual modifications. The company have improved their Favored Banner cook stove, giving it a flush top and adding a top side shelf. Similar changes have also been made in connection with their Majestic Banner. Still another novelty is the Columbian Banner, an attractive four-hole cook, made in three sizes and embodying the modern features.

CHARLES E. COLEMAN, representing Eugene Muddell & Co., 218 Water street, New York City, has been mailing a letter to his friends in the trade announcing that he will soon visit them in the interests of the Manhattan line of stoves and ranges and other specialties which the company manufacture.

TERSTEGGE, GOHMANN & Co. of New Albany, Ind., are about erecting on Sycamore street a three-story brick structure 60 x 132 feet in plan. The addition has been found necessary to meet the growing demands of the company's business.

THE SOMERSET STOVE FOUNDRY COMPANY of Somerset, Mass., successors to the Boston Stove Foundry and the Somerset Co-operative Foundry Company, have issued a catalogue of Somerset stoves, ranges and heaters. It is a 40 page publication, bound in flexible covers and arranged with an eye so that it may be hung up for reference. The goods shown cover a wide range and in connection with each is given more or less descriptive text of interest to the dealer. The company state that all goods are made from patterns designed under their supervision and that neither time nor expense has been spared in making the goods first class in every particular. The ranges are offered under such names as the Somerset Grand, Wyoming, Somerset G, Grecian, Matron, Somerset Jewel, which is the company's Columbian production; the Harvest Arion and the New Pallas. The heaters include the New Somerset sheet iron surface burner; the Arion, another member of the same class; the Cheerful cottage parlor stove, and the Leo, a

round surface burner. Attention is also given to stove repairs and miscellaneous hollow ware.

THE COLUMBIAN GARLAND STEEL RANGE which the Michigan Stove Company of Detroit, Mich., have lately brought out is a very substantial construction adapted for using any kind of fuel. It is made both four and six hole and has extra heavy front oven door frame, double oven bottom, interchangeable reservoir system, heavy portable grate and pedal arrangement for opening and closing the oven door. The range has aerated oven; has counter balanced oven door made of extra steel and top oven plate, and it is protected with cast iron plates with an air space between.

IN THE COLUMN devoted to Detroit commercial travelers in a recent issue of the Detroit *Evening News Weekly*, is an interesting article, of which James B. Rue, representing the Peninsular Stove Company in the State of Michigan, is the subject. A likeness of Mr. Rue is published, together with a brief sketch of his business career. Reference is also made to the extensive plant to the company he represents as well as of the goods manufactured. The point is made that Mr. Rue has met with such success that the term "Peninsular" is a household word throughout the territory he covers. He is described as a man of unusually quiet disposition, yet of such genial and affable manner that he has made hosts of lasting friends.

THE NOVELTY MFG. COMPANY, Jackson, Mich., last week filed a suit for an injunction in the United States Court, at Detroit, against the Coldwater Oil Stove Company. It is claimed that the defendants are infringing one of the patents of the plaintiffs, who ask that an injunction be issued to restrain the defendant from manufacturing certain stoves while the merits of the case are being examined.

JUDGE WAKEFIELD of the District Court has ordered that the plant of the Sioux City Stove Works, at Leeds, Iowa, be sold at receiver's sale, June 15.

WHITE, WARNER & Co., Taunton, Mass., manufacturers of the well known line of Household ranges, are delighting thousands of little children in New England by the distribution of a beautiful set of dolls which they offer to send to all children who will forward their name and address.

BRIDGE & BEACH MFG. COMPANY, St. Louis, Mo., closed down their entire plant on Saturday, 8th inst., to allow their employees to attend the annual picnic given by the Bridge & Beach Mutual Aid Association. There are 300 members in this association, and they with their friends left on board the steamer "Grand Republic" at 9 o'clock for Montezano, where the picnic grounds are located. The excursionists numbered about 2000, and the day was pleasantly spent by them on the river and at the grounds. This association is composed of the employees of the Bridge & Beach Mfg. Company, and was organized four years ago for the purpose of rendering aid and assistance to its members in case of sickness or death. It has been very prosperous from its inception and now has a large surplus in the treasury.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, during the past week shipped six carloads of furnaces, ranges and hot water heaters to their agents located in the prin-

cipal cities of the West and Northwest. Their sales so far this year are reported to have been double what they were a year ago.

THE PENINSULAR STOVE COMPANY of Detroit, Mich., favor us with a copy of what is known as Catalogue and Price-List No. 10. It consists of 56 pages devoted to hot water heaters and warm air furnaces for heating and ventilating buildings of all kinds. The printing is upon a good quality of paper and the binding is in attractive paper covers. The Peninsular goods are illustrated and described in a way to interest the dealer, and in addition to broken views of the heaters there are given tables showing the sizes made, the dimensions of fire pots and radiators, cold air box, number of brick required for setting, heating capacities, prices, &c. There are also given views of the foundation for a portable furnace when air is taken in under the floor, and of a brick set foundation showing cold air connection when the air is taken in above the floor. Dimensions of galvanized iron casings for Peninsular furnaces are given, as well as sizes and capacities of pipes, registers, &c. The last pages of the catalogue shows a bird's eye view of the works and general offices of the company at Detroit, their Western warehouse and offices at 78-81 Wabash avenue, Chicago, Ill., and their Eastern warehouse and offices at Buffalo, N. Y. Accompanying the catalogue is a folder relating to furnace pipe.

THE WORKS of the March-Brownback Stove Company at Pottston, Pa., were visited by a rather disastrous fire on the morning of Friday, June 7, when their molding room, pattern house, engine and cleaning rooms were destroyed. Fortunately their large warehouse containing an assortment of upward of 8000 stoves escaped the flames and the company are in shape to fill first orders. It is the intention of the company to rebuild at once, and they expect in the course of two or three months to be in a position to supply all demands of the trade.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, are distributing monthly among architects, plumbers and fitters a desk blotter, on one side of which is a calendar for the month, together with a neat advertisement calling attention to the Thatcher furnaces and ranges and the Champion steam and hot water heaters manufactured by the firm.

BYRAM & Co., Detroit, Mich., manufacturers of the Collihan cupola furnace, have recently furnished to the F. P. Glszler Company, Chelsea, Mich., a 54½-inch furnace of that type.

RATHBONE, SARD & Co., for whom I. N. Thatcher is local agent, are showing in their New York salesrooms, lately removed from 254 Water street to 115 Beekman street, an interesting assortment of Senator, Snap, Citizen and Colonist ranges, of which the first named is very popular in the New York market. The company are also represented by J. D. Marvin, who visits the trade in New York City and vicinity.

"HOOD FURNACES AND COMBINATION HEATERS" is the title of a tastefully printed pamphlet which reaches us from the Hood Furnace & Supply Company of Corning, N. Y. The body of each page of this publication is of a brownish tint and of such shape as to give the appearance of a panel, about which is a white border. The printing is in black and the binding is in muslin

covers with embossed side title. The early pages are devoted to interesting remarks relative to heating and ventilation, and one page is devoted to a diagram of the company's plant, showing their railroad connections. The Cheerful Home furnaces in various sizes are illustrated and described, as well as the Cottage Home, which is offered in five sizes. The Cheerful Home combination heater is illustrated and described and there is given a long list of testimonials from some of those who have used the company's goods.

THE DETROIT STOVE WORKS now exhibit in the sample room of their Chicago branch specimens of the new coal cook stove named the Detroit Jewel. Although this stove has been brought out to be sold at a low price, it is nevertheless far from being a cheap stove in either appearance or construction. The molding is in the rococo style of ornamentation, presenting a decidedly rich effect. The construction is modern in every respect. The stove is furnished either in square form or with reservoir, and with 16, 18 and 20 inch ovens. A new wood heater, cottage style, is also shown. This is similarly treated in rococo design and is very handsomely dressed, being profusely ornamented with nickel. It is built with a diving flue down the front and also with direct draft. Three sizes are made. Other new goods are being brought out for the fall trade which have not yet been shown to the general public, but are expected to be trade winners.

S. S. JEWETT & Co.'s Chicago warehouse is not now so conveniently situated for visitors as in the days when it was located in the heart of the wholesale district. But Manager F. A. Root finds it all right for the transaction of business as at present conducted. The location is at 2050 Grove street, in immediate proximity to several of the leading railroad lines running out of Chicago, with which it is connected by a side track. The rear abuts on the Chicago river, where a private dock enables vessels to be unloaded whenever cargoes of stoves are forwarded by lake from Buffalo. But this, by the way, does not often happen these days, as railroads compete too closely for lake lines to secure much business in hauling stoves. The warehouse is well equipped for handling a large trade and manager Root hopes to see it come.

The New York Chamber of Commerce and the Board of Trade and Transportation of that city are urgently demanding that high pressure water service be provided for the extreme lower section of the city, in order that the high buildings which now prevail in that section may have a better protection against fire than is at present the case. The municipal water engineers claim, however, that any system having service that would carry water to the tops of the high buildings would be very expensive and would involve a serious leakage from faucets and connections placed considerably lower than the maximum point. They contend that a pressure that will carry water to five or six stories, the height of an ordinary building, is all that can be expected under present conditions. In the case of extraordinarily tall structures the owners will probably be obliged to insert their own pumping arrangements for fire protection and water service. It is pointed out that by furnishing motive power for elevators and

other light machinery a pumping system of this description may be made to pay for itself.

London, Paris and New York.

The following statistical comparison of the three leading cities of the world is made by the *New York Herald*: New York, by the census of 1895, is a city of 2,000,000 inhabitants. The population of London is 4,200,000. The population of Paris is 2,400,000.

The area of London is 75,000 acres. The area of Paris is 18,700. The area of New York is 24,000.

London has 600,000 houses. Paris has 90,000 houses. New York has 115,000 houses. London averages seven residents to a house, Paris 25 and New York 18.

London has 1390 miles of streets. Paris has 600 miles of streets. New York has 575 miles of streets. London has 2300 miles of sewers, Paris has 410, New York has 444.

The water supply of London is 175,000,000 gallons a day. The water supply of Paris is 100,000,000 gallons a day. The water supply of New York is 190,000,000. New York stands at the head of the three chief cities in this particular.

London has 1000 firemen, Paris has 1500, New York has 1100. For speed and efficiency the New York department stands at the head of the three cities. Fires are much more frequent, in proportion to the population, in New York than in either London or Paris. London loses \$7,500,000 a year. Paris \$1,500,000 and New York \$5,000,000.

There are 12,000 cabs and 2500 stages in London. There are 8000 cabs and 1250 stages in Paris. There are 1000 cabs and 300 stages in New York.

The municipal expenses of London are \$70,000,000. The municipal expenses of Paris are \$65,000,000. The municipal expenses of New York (State taxes included) are \$40,000,000.

The death rate in London is 21 per 1000 population; in Paris, 28, and in New York, 21. The number of deaths in New York City last year was 41,000; in Paris, 67,500, and in London, 89,000.

London has 14,000 policemen, Paris has 6000 policemen, New York has 3800 policemen. The ordinary arrests in New York in a year are 85,000; in Paris, 100,000, and in London, 150,000.

Street lighting costs \$2,800,000 in London, \$3,500,000 in Paris and \$500,000 in New York. Gas was introduced in London one year in advance of Paris. Eight years later it was introduced in New York. London has 75,000 street lamps. Paris 50,000 and New York 28,000, exclusive of electric lights.

London was founded in the year 60. Paris was founded in 860. New York was founded 1614. All three are on rivers. London is 60 miles; Paris is 111 miles from the sea.

The number of railroads entering London is 14. The number of railroads entering Paris is 8. New York being chiefly on an island, is actually entered by 5 railroads only. By ferry it is entered by 12 more—in all 17.

The number of inhabitants per acre in London is 50, in Paris 120 and in New York 80. The density of population in London is greatest in the White-chapel district, in Paris in the Temple district (290 per acre) and in New York in the Tenth Ward (Jewish quarter), 700.

A New Fire Lighter.

An ingenious device described in the *London Ironmonger* has been brought out in England, by the adoption of which the use of wood, paper, &c., in starting a fire is dispensed with. The mechanical arrangement consists of a fan, driven by a clock work mechanism, which is wound up by a crank. Directly in front of the fan is the blast pipe and a small open chamber, which is filled with asbestos fiber, soaked in paraffine oil. The apparatus is inclosed in a neat fitting case and so adjustable that it can be placed in front of any coal grate. When so placed the asbestos is lighted with a match and the fan set in motion by a small lever. The blast of air from the fan drives a highly oxidizing flame into the fuel and causes it to burn quickly. The igniter flame is allowed to die out in a very short time, but the fan continues to act as a forced draft, producing a good burning fire in a very short time. There is no danger from explosion, as the cavity for holding the oil is very small, and its cost for lighting 50 fires would be only a few cents.

Some New Uses of Aluminum.

The following new uses of aluminum are recorded in the *Aluminum World*: Aluminum lined cooking utensils are made from a solid plate of strictly pure aluminum inside, superimposed under pressure upon a sheet of steel outside. They claim the advantage of being strong, stiff, light and everlasting. This ware, they say, can be used against the bare flame without scorching. Aluminum wire is increasing in use, and if it continues to cheapen may be the wire of the future. Its electrical conductivity is three times that of iron, and more than half as great as copper, while its tensile strength is one-third that of steel and its resistance to corrosion phenomenal. We have received a number of inquiries for aluminum bedsteads. A novelty is a bouquet holder for use in cemeteries on Decoration Day and during the summer months. A cone shaped holder contains the water, into which the stems of the flowers are inserted, holding them erect and preserving their freshness. The cone terminates in a rod which is forced into the earth. It is painted green, to have the color of the grass. Aluminum burial caskets are in great demand in the trade. The experiment of making caskets from the light material is only eight months old. The cost of aluminum caskets is about the same as ordinary metal ones. They are practically indestructible. The signal lights of the Cup Defender will be made of aluminum. A lamp of aluminum weighs 1½ pounds without the glass.

A cellulose paint adapted for the protection of iron and metal surfaces, which is described by the *Practical Engineer* of London, consists of a 10 per cent. solution of ordinary wood pulp, to which may be added any coloring matter desired. At the moment of using the paint there is to be added to it some sort of siccative, such as an acid salt of lead or manganese. The paint finally becomes insoluble, affords a good protecting covering and does not scale off like other paints and varnishes. It may become immediately insoluble and resistant by a second coat of one of the siccatives named above.

TRADE REPORT.

The Iron Market.

The past week has been one of the most stirring in the history of the Iron trade for many years. It presents an unbroken record of advances all along the line, and few are left who would characterize the upward movement as a "soda water rise." The most extraordinary thing is that the upward tendency has developed so fast without the powerful aid of heavy purchases from the principal consumers, the railroads. It is true that the railroads have been buying a little more liberally, but it is certain, too, that they have not yet taken hold as they will if finances get into better shape and crops do better than the earlier scare stories would indicate. This may make this summer an exception to the usual dullness of that season.

The central West leads in the advance and the boom feeling prevailing there seems justified, because there is practically no reserve capacity either in furnace plant or Steel works. It is really only in Chicago that such a reserve does exist anywhere west of the Alleghany Mountains. It is very different in the East, and so far as Pig Iron is concerned, in the South, and notably in Virginia.

The rise in Steel and the difficulty in getting Tin Plate Bars is making the domestic manufacturers of Tin Plate nervous over the danger of being forced to surrender a part of their market to foreign makers. It looks as though heavier imports of Black Plates are unavoidable.

In Foundry Iron there have been heavy sales in Cincinnati. The Southern furnaces have advanced prices 25c. per ton, and in Chicago local Foundry Iron is up 50c. The market is stiff and is rising in the East. The announcement is made that the Tennessee and Sloss companies will establish a joint sales agency. Other Birmingham companies are talked of as being ready to join the movement, but in the case of at least one of them no credence is attached to this report.

Pig Iron.—In the New York market there has been a further advance of 25c. per ton on the part of the Southern furnaces. Reports that the Pioneer and Woodward Companies had joined in the proposed joint sales agency of the Tennessee and Sloss companies cannot be confirmed here, nor is it considered likely that the first named will participate in the arrangement. There has been a good volume of buying and little resistance to the upward tendency on the part of buyers. Some of them have old options which they are prompt to avail themselves of. The makers of Standard Northern brands are calling upon consumers to take what Iron is due on contracts until July 1 at the penalty of canceling. One prominent company has already secured a further advance of 50c. a ton on deliveries beyond July 1, and it seems likely that a further advance will be decided upon. We quote \$12.50 to \$12.75 for No. 1; \$11.50 to \$11.75 for No. 2, and \$10.75 to \$11 for No. 2 Plain, and \$10.25 to

\$10.50, Northern brands, tidewater delivery Southern Iron, same delivery, is selling at \$12.25 to \$12.50 for No. 1; \$11.50 to \$11.75 for No. 2; \$11.25 to \$11.50 for No. 3; \$11.25 to \$11.50 for No. 3 Soft, and \$11.50 to \$11.75 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10.75 to \$11.

A remarkably strong feeling is reported as pervading the Pig Iron market in the Philadelphia district. Foundry Irons are firm and a shade dearer, but they are relatively less sought for than those for mill purposes. It is not thought likely that much further advance will be made at present, as the fact of other furnaces going in blast will tend to allay fears of scarcity for some time to come. Every advance in the selling price will tend to increase the supply, so that unless something very unforeseen occurs prices are not likely to work very much higher, although a decline from prices now ruling seems to be extremely improbable. Orders from furnaces to their agents have in some cases been very imperative to sell no more Iron pending further instructions, and in all cases unusual caution is observed in regard to quoting on large lots. It is difficult to quote with exactness, but in most cases Philadelphia deliveries command about the following prices:

Standard No. 1 Foundry X.....	\$12.25 to \$12.75
Standard No. 2 Foundry X.....	11.50 to 11.75
No. 2 Plain.....	11.00 to 11.25

Manufacturers of local Coke Iron in the Chicago district advanced their prices 50c. Business was checked to only a slight extent by the advance, a considerable number of contracts having been placed at the higher rate. Consumers who are endeavoring to place orders for long delivery are now being quoted an advance of 25c. for each quarter of the year, making a price of \$1 per ton higher for the last quarter than current rates. The indications point to a scarcity of Pig Iron in the late summer or early fall, which is a contingency that was not regarded as possible only a few weeks since. Southern Coke Iron has been marked up. Only one large Southern company is in condition to take business, and it is quoting higher prices for future delivery. Buyers are showing a disposition to speculate on the future and are endeavoring to place contracts considerably in excess of what it is believed they will require. A good demand has been felt for Lake Superior Charcoal, but in small lots. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	11.00 to 11.50
Local Coke Foundry, No. 2.....	10.75 to 11.00
Local Coke Foundry, No. 3.....	10.25 to 10.75
Local Scotch No. 1.....	11.00 to 11.50
Ohio Strong Softeners, No. 1.....	13.00 to 13.25
Southern Silvery, No. 1.....	12.25 to 12.50
Southern Silvery, No. 2.....	11.75 to 12.00
Southern Coke, No. 2.....	11.00 to 11.25
Southern Coke, No. 3.....	10.75 to 11.00
Southern, No. 1 Soft.....	11.00 to 11.25
Southern, No. 2 Soft.....	10.75 to 11.00

There is an improved demand for Foundry Iron in the Pittsburgh market, but prices are without recent change. Quotations are as follows, Pittsburgh delivery:

No. 1 Foundry.....	\$11.00 to \$11.25, cash
No. 2 Foundry.....	10.50 to 10.75

Advices from Cincinnati indicate that activity, strength and buoyancy are the chief attributes of the local Pig Iron market at present. Large sales and heavier inquiries have stamped the week under review with the seal of confidence. A further advance of 25c. per ton has been established on all grades of Southern Iron. The volume of business during the week has been quite large in the aggregate, the transactions embracing upward of 40,000 tons. Pipe foundries and other large melters of Iron have been in the market, the former alone taking about 10,000 tons. Aside from this, the largest individual transaction was one of 4000 tons Foundry grades, but there have been a number of 1000 ton orders and a host of 500-ton lots, and when the returns are all in and checked up it will be strange if furnaces do not check the active buying by another substantial advance in prices. That buyers are anticipating their wants liberally seems to be clear, but beyond this the movement seems to be free from speculative influences. Quotations are given as follows:

Southern Coke, No. 1.....	to \$10.50
Southern Coke, No. 2.....	to 10.00
Southern Coke, No. 3.....	to 9.75
Southern Coke, No. 1 Soft.....	to 10.00
Southern Coke, No. 2 Soft.....	to 9.75
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	11.75 to 12.25
Lake Superior Coke, No. 2.....	10.75 to 11.50
Hanging Rock Charcoal, No. 1.....	to 11.50
Hanging Rock Charcoal, No. 2.....	to 11.00
Hanging Rock Charcoal, No. 3.....	to 10.00
Tennessee Charcoal, No. 1.....	13.50 to 14.00
Tennessee Charcoal, No. 2.....	12.50 to 13.00

At St. Louis the situation in Pig Iron is extremely strong. Consumers are increasing their orders and furnace agents are asking full prices. Prices have again been advanced 25c. per ton, making No. 2 Foundry \$10.50, f.o.b. cars St. Louis. This last advance makes a gain of \$1 per ton over the lowest figures quoted, and at the top prices ruling today a larger business is being transacted than when prices were at their lowest a few months since. Locally there is a steady increase in consumption, and some of the heavy consumers are endeavoring to fill their wants for the balance of the year, but are unable to do so at to-day's prices. The situation is one of considerable strength and indications point to higher prices in the near future. We quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$11.00 to \$11.25
Southern Coke, No. 2 Foundry.....	10.50 to 10.75
Southern Coke, No. 3 Foundry.....	10.25 to 10.50
No. 1 Soft.....	10.50 to 10.75
No. 2 Soft.....	10.25 to 10.50

Metal Market.

Pig Tin.—The market has suffered very severe depression. Wholesale prices have fallen fully 4c. per lb. Many long contracts were closed out on the decline and Tin has been sold for short account to a considerable extent as well, while every opening among out-of-town dealers and consumers received the careful attention of prominent local operators, some of whom sold at prices closely in line with contract rates for both prompt and future delivery. The

decline was a natural outcome of largely excessive supplies and inability or unwillingness of the late bull interest in the European markets to contend against the adverse influences. In the local market there is nothing that as much as suggests a bull interest. Later in the week some reaction in prices occurred, and the feeling seemed favorable for a further rise, but operations were on a rather smaller scale. The jobbing demand has been fair, small lots of Strits Pig from store are quoted about $\frac{1}{2}$ ¢. lower, or at $15\frac{1}{2}$ ¢. to $15\frac{3}{4}$ ¢. per lb.

Copper.—The depression in Tin and lower quotations from London on Copper have operated to restrain buying in this market to some extent and prompted lower quotations, based solely upon what certain interests thought should be proper under existing circumstances. When it comes to the matter of actual business, facts are wanting to make it clear that there has been any decline, except possibly in the shape of slight concessions on small lots from second hands. Jobbers' price for Lake Ingot in moderate sized lots is $11\frac{1}{2}$ ¢. to $11\frac{3}{4}$ ¢. per lb. It is general report that consumption is heavy on both sides of the Atlantic, particularly in this country, and that the outlook is very promising for the near future.

Sheet Copper.—A good demand for Cornice Copper continues, both on account of increased current requirements and for stock. Prompt shipment is required in most cases, but some substantial contracts for future deliveries have been placed during the week. Small lots of Sheet Copper from store are still quoted at the net price of $14\frac{1}{2}$ ¢. per lb., but an early advance in the list on manufactured Copper is regarded as among the probabilities. The likelihood of an advance in price has apparently stimulated consumers to place their orders at once.

Pig Lead.—Operations have been on a smaller scale the past week, but the market has lost nothing in strength and tone. The demand from consumers has been of a healthy character, and retail prices have continued firm, at $3\frac{1}{2}$ ¢. to $3\frac{3}{4}$ ¢. for small lots of American Pig from store.

Lead Pipe and Sheet.—In its general character the demand for Manufactured Lead maintains the improvement referred to in our last week's report. Inquiries are active from consumers of plumbing supplies, as many buildings are now advancing to the point at which the plumbers' work must be attended to. So far no advance has been made in the price-list on Sheet Lead and Lead Pipe in this section, although Shot has been marked up this week. Prices are, however, stiffening materially. Lead Pipe in small quantities from store is quoted at $5\frac{1}{2}$ ¢. and Sheet Lead at $6\frac{1}{2}$ ¢., subject to the usual discount.

Spelter.—Dealings have been on a smaller scale the past week and the demand has moderated considerably also. In other respects the market is unchanged. Smelters are as reserved as formerly in their offerings and stand out firmly for the highest prices reached of late. In some instances there were point blank refusals to consider offers below $4\frac{1}{2}$ ¢. for wholesale lots of best Western brands. In small jobbing parcels good Western Spelter rules at $4\frac{1}{2}$ ¢. to $4\frac{3}{4}$ ¢. per pound.

Sheet Zinc.—This material holds its own in point of firmness. Stocks are

still light and the demand fairly active. The stringency which has been felt for the past few weeks, however, gives signs of abatement, as the most pressing requirements of consumers are being gradually satisfied. The usual price for 600 lb. casks is $6\frac{1}{2}$ ¢., while broken lots rule at $7\frac{1}{2}$ ¢. per lb.

Antimony.—A routine jobbing business is about all that has been done. Prices are barely steady at $9\frac{1}{2}$ ¢. for Cookson's and $8\frac{1}{2}$ ¢. for Hallett's, in small retail parcels.

Nickel.—Sellers' figures remain at $35\frac{1}{2}$ ¢. to $40\frac{1}{2}$ ¢., according to quantity and terms.

Tin Plate.—A fairly large business has been done in foreign Cokes for future delivery, at about last week's prices. The demand from the canning trade is larger than was expected a short while ago. In the wholesale market spot sales are, however, still below the average. The quotations for Welsh Plates rule rather higher, on account of the restriction of production on the other side, as well as the large reduction in stocks which has taken place there lately. On June 1 the official returns of stocks of Plates ready for shipment at British ports showed 293,000 boxes, which is 104,000 less than the amount in hand on May 1, and the smallest amount since the boom of 1891, before the imposition of the McKinley tariff. The dwindling of foreign stocks is very marked as compared with a year ago, when stocks at shipping points amounted to 541,000 boxes. For this reason quotations on Welsh Plates are considerably stiffer, and some lines of imported Plates are at the present time virtually out of the market. The domestic mills are running full. The majority of them have contracted for the whole of their output as far ahead as August or September. Early deliveries of Domestic Plates are difficult to get, particularly as the delivery of Bars to the mills and of Black Sheets to the dipping plants is at the present time very slow. It is understood that some large contracts have been entered into by some of the newly started American works at ridiculously low prices. We have heard of one of 30,000 boxes, which was taken by a new concern at $25\frac{1}{2}$ ¢. a box below the current rate. With the recent rise in the price of steel, it is likely that this concern will find a heavy balance debtor at the termination of their contract. Other domestic manufacturers have marked up their price $2\frac{1}{2}$ ¢. to $5\frac{1}{2}$ ¢. a box from the lowest, on account of the recent rise in price of Bars and Black Sheets. A very fair current demand exists for American Terne Plates, and prices all around are firmer, although in very few cases do they show any quotable change.

A special London cable dispatch of June 12 to *The Iron Age* reports on the British Tin Plate market as follows: Tin Plate is firmer, with inquiry good. A few large forward lines have been placed at rather improved prices. Threatened strikes, however, hamper business. Among other transactions were fair lines of cheap grade Terns for America, but prices were cut fine. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, $10\frac{1}{2}$ x $20\frac{1}{2}$, 9s. 3d. to 9s. 6d.
 Siemens Cokes, $10\frac{1}{2}$ x $20\frac{1}{2}$, 9s. 6d. to 9s. 9d.
 Terns, $20\frac{1}{2}$ x $28\frac{1}{2}$, 11s. to 22s. 6d.
 Charcoals, $10\frac{1}{2}$ x $20\frac{1}{2}$, 11s. to 13s. 6d.

Sheet Iron.—Almost every Sheet mill in the country is sold up to July at least, and some to a later date than that. The readjustment of the wage scale, which will occur in July has, however, prevented some of the manufacturers from making contracts be-

yond that date. It is a matter of the greatest difficulty at the present time to get prompt shipments of either Black or Galvanized Sheets, while stocks in jobbers' hands in this section are dwindling rapidly. The demand for Galvanized Sheets continues to be heavy, and considerable inconvenience is experienced by consumers in the inability to obtain reasonably early filling of their orders. Galvanized Sheets have again advanced, and in small or moderate sized quantities are not now obtainable under 70 and 5 to 70 and 10 per cent. off. Jobbers have also marked up Black Iron. No. 27 Common Iron, in small lots, is now quoted at $2.90\frac{1}{2}$ ¢. to $3\frac{1}{2}$ ¢. Black Plates for tinning purposes also show an advance and are in eager demand by the "dipperies."

Chicago Report.

Scrap.—The demand is growing larger. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb.
No. 1 Wrought Scrap.....	\$7.50	.....
Machinery Cast.....	6.00	.....
Malleable Cast.....	6.00	.....
Stove Plate (free of burr).....	4.50	.....
Burnt Iron and Grate Bars.....	2.50	.....
Sheet Iron and Hoops.....	2.00	.....
Plow Steel and Breaking Stock.....	3.50	.....
No. 2, such as Shovels, Hoes, &c.....	2.50	.....
Old Boilers—whole (iron).....	3.00	.....
" " (iron)—cut in single Sheets and Rings.....	5.00	.....
Old Gas-Pipe and Boiler Tubes.....	5.00	.....
Cast Borings.....	3.50	.....
Turnings.....	4.00	.....
Horseshoes.....	3.50	.....
Copper Wire and Heavy.....	7 ½¢	.....
Copper Bottoms.....	7 ½¢	.....
Copper Clips.....	7 ½¢	.....
Heavy Brass.....	6 ½¢	.....
Light Brass.....	3 ½¢	.....
Pipe Lead.....	2 ½¢	.....
Tea Lead.....	2 ½¢	.....
Zinc.....	3 ½¢	.....
Rubber.....	3 ½¢	.....

Anthracite.—Business is moderate. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.60	\$4.75
Milwaukee, Wis.....	4.40	4.75
Kansas City, Mo.....	7.80	7.95
Council Bluffs, Iowa.....	7.80	7.95
Lincoln, Neb.....	7.95	8.10
St. Paul, Minn.....	7.80	7.95
Aberdeen, S. Dak.....	7.85	8.00
Dubuque, Iowa.....	5.90	6.05
Madison, Wis.....	6.10	6.25
St. Paul, Minn.....	7.10	7.25
Burlington, Iowa.....	6.10	6.25
Des Moines, Iowa.....	7.60	7.75
Davenport, Iowa.....	5.90	6.05
St. Joseph, Mo.....	7.80	7.95
Leavenworth, Kan.....	7.80	7.95
Omaha, Neb.....	7.80	7.95

Colorado Anthracite

COLORADO FUEL & IRON COMPANY.

	\$8.00
Denver.....	8.00
Fueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	10.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

IN THEIR PAGE ADVERTISEMENT in this week's issue Sumner & Goodwin, Boston, Mass., manufacturers and jobbers of Wrought Iron Pipe, Steam Gas and Plumbing Materials, call attention to their Humboldt Basin, pointing out that it has a quick discharge, small fouling surface and no nickel plated work exposed in the basin. They also refer, with illustrations, to their Clamp and Testing Cover for iron hopper traps.

Hardware Trade.

Notes on Prices.

Heavy Copper.....	lb	73	¢
Light and Tinned Copper.....	lb	74	¢
Heavy Brass.....	lb	5	¢
Light Brass.....	lb	4	¢
Lead.....	lb	3	¢
Tea Lead.....	lb	25	¢
Zinc.....	lb	24	¢

No. 1 Pewter.....	lb 9½¢
No. 2 Pewter.....	lb 4½¢
Wrought Scrap Iron, gross	
Heavy Cast Scrap.....	\$8.00 @ \$8.50
ton.....	8.50 @ 9.00
Stove Plate Scrap, gross ton	6.00 @ 6.50
Burnt Iron.....	gross ton 5.00

Old Rags, Paper, &c.—Paper Stock has been moving actively in the past week. Dealers' purchasing prices, New York delivery, rule as follows:

No. 1 White Rags.....	lb 3 @ 3½¢
No. 2 White Rags.....	lb 2½ @ 2½¢
Mixed Rags.....	lb 1 @ 1¢
Blues and Sds.....	lb 1 @ 1½¢
Hard Sided White Shavings.....	lb 2½ @ 2½¢
No. 1 White Book Shavings.....	lb 1½ @ 1½¢
No. 2 White Book Shavings.....	lb 1 @ 1½¢
Light Book Shavings.....	lb ¾ @ ¾¢
No. 1 Mixed Shavings.....	lb ¾ @ ¾¢
No. 2 Mixed Shavings.....	lb ¾ @ ¾¢
No. 1 Printed Books.....	lb 1 @ 1½¢
Ordinary Mixed Books.....	lb ¾ @ ¾¢
Newspapers.....	lb 1 @ 1½¢
No. 1 Manila Paper.....	lb ¾ @ 1¢
No. 2 Manila Paper.....	lb ¾ @ ¾¢
Bogus Paper.....	lb ¾ @ ¾¢
Common Paper.....	lb ¾ @ ¾¢
Straw Chips.....	lb ¾ @ ¾¢
Binders' Clippings.....	lb ¾ @ ¾¢
Jute Butts.....	lb 1½ @ 1½¢
No. 1 Jute Bagging.....	lb 1 @ 1½¢
Mixed Bagging.....	lb ¾ @ ¾¢
No. 2 Bagging.....	lb ¾ @ ¾¢
Hemp Twine.....	lb 2 @ 2½¢
Manila Rope.....	lb 2 @ 2½¢
Jute Rope.....	lb 1½ @ 1½¢
Mixed Rope.....	lb ¾ @ ¾¢

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, gross	3 @ 3½¢
Rubber Shoes, carloads, delivered at factory, gross	4½¢
Rubber Shoes, less than carloads, gross	4½¢
White Wringer Rolls, gross	3½¢
White Syringes, gross	3½¢

Trade Notes.

THE YOUNGSTOWN STAMPING WORKS, Youngstown, Ohio, were sold last week for \$13,815 to a committee representing the creditors of the concern.

CHARLES & Co. is the name of a firm which, it is reported, will establish canning works, with a capacity of 90,000 cans daily, at Warsaw, Ind.

THE HALF PAGE ADVERTISEMENT of the Model Mfg. Company, 128-130 Oliver street, Boston, Mass., which appears in this issue, enumerates some of the specialties which this concern are putting on the market. Model Mfg. Company are composed of men well known and experienced in the trade, who are taking a great deal of pride in the success of their venture, which is already assured. They invite the trade generally to give them an opportunity to quote figures on their lines.

THE DELANY HEATER & RHEOSTAT Company of New York City were recently incorporated, with a capital stock of \$100,000. J. R. Steers and E. T. Birdsall are named as directors.

THE PAGE ANNOUNCEMENT of the E. P. Barrett Mfg. Company, 81 Sudbury street, Boston, Mass., directs attention to the Zane Sanitary Water Closet, of which an illustration is shown, with the invitation that every one send for catalogue. A feature of the announcement is the testimonial letter from Tilly Haynes, dated April 5, 1895, Mr. Haynes being the proprietor of the United States Hotel, Boston, in which he used 50 Zane Closets, and later used them in all the new work in the Broadway Central Hotel, New York.

DEHAVEN & Co., LIMITED, Pittsburgh, Pa., are directing the attention

of the trade to their new line of Cinderella Kitchens. These are referred to as being all cast iron and adapted for burning hard or soft coal or wood. They are made in a variety of sizes, and many points of excellence are claimed for them. The firm also make a full line of stoves and ranges under the trade mark of "Cinderella." The trade are invited to send for catalogue.

FOLLANBEE BROTHERS' COMPANY, successors to James B. Scott & Co., Pittsburgh, Pa., are displaying a very generous spirit and one which their customers will be sure to appreciate. In their advertisement elsewhere in this issue they advise against delay in placing orders as prices are advancing. They announce that they carry large stocks of galvanized, common black, refined and patent plished iron, from which prompt shipments can be made. Other lines of goods handled by this firm are also noted.

THE SWARTS METAL REFINING COMPANY, 120-122 West Lake street, Chicago, report quite an improvement in business. They have been receiving a large number of orders throughout the country on the catalogue which they sent out three or four months since. The demand for all grades of metals which they handle is nearly double in number of orders, also in quantity. Among the orders they have recently filled is a large shipment for Salt Lake City, Utah, and several others for North and South Dakota. The prospect for good trade in the metal line has never been brighter.

GEORGE STARRETT, 227 and 229 Water street, New York, who is agent for the Craig Polished Sheet Steel manufactured by Kirkpatrick & Co., Limited, of Pittsburgh, is able to report a steadily increasing demand for this product from quarters in which Russia Iron was formerly used.

A strike occurred last week among the can makers in some of the Baltimore factories. The men claimed that it was too hot to work for the wages they were receiving—about \$1.20 a day. They demand an increase of about 85 cents a day.

The Philadelphia Ledger describes a new form of electric heater which was recently exhibited at the Franklin Institute in Philadelphia. It consisted of a series of glass tubes coated on their interior with quicksilver, similar to that used for mirrors. The tubes were electrically connected together, much in the same manner as steam pipes are in a radiator. The mercury deposit conveyed the electric current from tube to tube, and the resistance could be varied by various combinations of tubes. The resistance would also vary as the thickness of the deposit. The principle is applicable to plane surfaces also.

To detect lead in water, says an English exchange, put a small piece of iodide of potassium into a jug of water. If there is any appreciable quantity of lead in it the water will turn yellow.

The arrangements for the formal opening of the Harlem Ship Canal, on June 17, are completed. They comprise river and land parades, in which some vessels of war and regular troops will take part.

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THE METAL WORKER.

NEW YORK AND CHICAGO.

Saturday, June 22, 1895.

DAVID WILLIAMS, - - PUBLISHER.

BUSINESS OFFICES:

NEW YORK.....00-102 Beade Street.
PHILADELPHIA.....290 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 500 Hamilton Building.
CHICAGO.....59 Dearborn Street cor. Randolph.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....Bank of Commerce Building.
CLEVELAND.....312 The Cuyahoga.

BRITISH AGENCY: The Ironmonger, 42 Cannon Street, London, England.

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Index to Reading Matter.....Page 54.

The Boston office of *The Metal Worker* has removed from 146 Franklin street to 33 Mason Building, 70 Kilby street.

Women Workers.

One of the most interesting features of a statement recently issued by the Census Bureau at Washington, regarding the number of persons engaged in gainful occupations in this country in 1890, is the evidence which it gives of the increasing number of women who are engaged in the industries and occupations formerly monopolized by the other sex. While the growth in the number of workers in the manufacturing industries during the ten years between 1880 and 1890 was 49 per cent., that in trade and transportation 78 per cent. and in professional service 56 per cent., the increased percentage of women workers under these classifications was even larger, amounting in the case of trade and transportation to as much as 263.25 per cent. Of the 22,735,061 persons, in 1890, engaged in gainful occupations, 18,820,950 were males and 3,914,711 were females. In 1880 the total number of persons so employed was 17,392,099, of whom 14,744,942 were males and 2,647,157 were females. The percentage of increase in the number of workers was 30.72. The male increase was, however, only 27.64, while the female increase was 47.88. The proportionate increase in female labor over 1870 is still more striking, as it amounts to 113.19 per cent., as compared with 76.4 per cent. on the part of the males. Thus, within a score of years, the number of women workers in this country has more than doubled, while the number of male workers has increased but 76 per cent. The most striking increases in the numbers of female workers are shown, not, as might be expected, in domestic and personal service, but in trade and transportation, in professional service and in manufacturing and mechanical industries. Among the employments

for women which have almost wholly developed within the last 20 years are clergymen, journalists and physicians. In these professional classes it is interesting to note that in 20 years the number of male clergymen just about doubled, while the female clergymen increased from 57 in 1870 to 1235 in 1890. Between 1870 and 1890 the number of male journalists as nearly as possible quadrupled, but in the same time the women journalists increased from 35 to 888. The number of men physicians increased in the same time only about 40 per cent., but the women physicians increased 900 per cent. Twenty years ago there were no women registered as chemists, engineers or surveyors, while in 1890 46 women are described as chemists or engineers and 127 as surveyors. In the list of various occupations given in the report it appears that women have invaded every department of industry and professional service excepting the army and navy.

The Harlem Ship Canal.

During the week the eyes of all Europe have been turned on the consummation of Germany's great commercial and maritime work, the Baltic-North Sea Canal, which was formally opened on Friday with imposing ceremonies. War vessels, representing all the navies of the world, joined the procession through the new and important waterway, affording the finest international naval display ever seen. The same week has witnessed a similar event, on a more modest scale, much nearer home, namely, the opening of the Harlem Ship Canal last Monday. In its influence on the commercial interests of New York City and State this event is one of great local importance. By the opening of the canal the waters of the Hudson River and Long Island Sound have been joined and some 14 miles of new water frontage in New York City has been made available for wharfage purposes. The new waterway will be also of immense advantage to traffic in saving some 20 miles of navigation through crowded water to vessels coming down the Hudson and bound for the East River or the Sound. The work is not yet completed. So far the canal has been finished only to a width of 200 feet and a depth of 15 feet. Eventually the waterway will be 400 feet wide and 20 feet deep. But the most important part of the work has been done, namely, the cutting through a hill of solid rock in order to secure a direct channel. About \$1,000,000 have been expended and the finished work will call for about \$2,000,000 more in order to reach the full proportions of the project.

Judging by Appearances.

"Appearances are deceitful," so goes the old saying, and there are few of us who have not learned by actual experience how far this is true. The man who is such a judge of human nature as not to be sometimes deceived is by long odds the exception rather than the rule. It is certainly in our relations to our fellow men that we most often are misled by appearances. By no means, however, is it true that we most frequently make the mistake of thinking that that which appears good and upright in a man is only a sham, and that beneath it all there lurks the sneak—the man without a character. Too often do we misjudge a man by his appearance and set him down as dishonest or incapable, when a little investigation or an opportunity to show himself at his best will convince us of our error. This false judging is too often evident in the experience of those who have the responsibility of selecting workmen in the various industries. A good workman does not always wear the evidence of his ability in his face, and there are few among us who cannot recall among the best workmen they know some men who at first glance would be set down as even lacking in common sense, to say nothing of mechanical ability. In all justice to such men, for whom nature seems not to have done all that she might, they should be given an opportunity to prove their worth. And this opportunity can only come through an effort on the part of the employer or his representative to select employees only after careful investigation and not to judge too largely by external appearances.

According to the complete returns of Director Preston of the United States Mint, the total gold production of the world in 1894 was \$181,510,100, which is an increase of \$22,074,000 over 1893, which was itself the year of largest previous gold production by over \$12,000,000. The most notable increase in production was in Africa, where the gain was \$11,400,000; in Australia, \$6,073,000; in the United States, \$3,500,000; and Mexico, \$3,195,000. The indications from the great producing regions, the director states, are for a corresponding gain during the current year, which will carry the gold production of the world to over \$200,000,000.

A much needed improvement has been taken in hand in New York City in the transformation of Mulberry Bend, one of the most notorious of the crowded and unwholesome slums of the city, into a small park. About 1000 families were last week turned out of the tenements in this district to seek more healthy quarters elsewhere.

THE LETTER BOX.

Casting Statuettes.

From T. C. Boston.—It is not surprising that "J. R. H." Hazelton, Pa., whose letter appeared in *The Metal Worker*, June 8, should experience some difficulty in casting statuettes when brass molds are used. Brass is a rapid conductor of heat, and when the melted alloy is poured in it becomes cooled before reaching all parts of the mold and incomplete castings are the result. After a number of attempts have been made the molds may become so heated as to allow the alloy to fill the space and thus produce a complete figure. As the molds become heated it takes some time for the alloy to cool so it can be removed and much inconvenience is the result. As a remedy for this difficulty it is recommended that the inside of the molds be smoked by means of a kerosene lamp or tar paper, thus covering the surface with carbon, which is a non-conductor of heat. This covering of "smoke" can be made very thin, so as not to change the shape of the figure.

There are various grades of "gold" bronze that can be used for giving the figures a bright gold color, providing the coating will be sufficiently durable. The following solution is said to be suitable for gilding bronze figures and gas fixtures, the operation being performed by immersion. Dissolve $2\frac{1}{2}$ pounds of caustic potash, 5 ounces of pearl ash (carbonate of potassium), 2 ounces of cyanide of potassium, in 5 quarts of water, in which must previously have been dissolved $\frac{1}{4}$ ounce of gold chloride. This solution must be heated nearly to boiling before using, and it is upon the temperature that the color will depend. The gilded surface can be worked up with a brush and whiting, finishing with rouge and burnishing. Before gilding the surface of the article should be scoured clean with a brush and some polishing powder. Any grease can be removed by rinsing in a boiling caustic potash solution.

Making a Smoke Test.

From R. C. J., Brooklyn.—Will you kindly state what material is best to burn in a smoke test machine? How much material would be required to fill a line of 4-inch pipe 100 feet long with smoke? Which point is best to make the test from, the cellar or the roof? Is the smoke test as effective in detecting leaks as the water test?

Note.—We shall be glad to have our readers give their opinions on this subject. Some plumbers who do pipe fitting use the oily waste which accumulates in the shop in the smoke test machine and put a little sulphur in with it. This makes a dense smoke in great quantity. Others prefer to use the tar paper such as is used in roofing, which seems to present some special advantages. One pound of sulphur and as much of the oily waste as will fill an ordinary bucket will furnish all the smoke required for the amount of piping mentioned. If the paper was torn in small pieces the amount that would fill two buckets would probably be required. The

paper can be more conveniently carried, as it comes in a roll and the quantity can be torn off as required. In the opinion of some plumbers the test should be made from the cellar, as the smoke is light and rises. In such cases one of the ventilating openings in the roof should be left open until the smoke commences to come out of it, when it should be closed. Where there is no convenient opening in the cellar for forcing in the smoke a satisfactory test can be made from the roof. The water test is looked upon as the most severe test that can be used, inasmuch as it presents a much stronger pressure and is equally searching in finding the leaks. It is generally considered that the smoke test is sufficiently effective for all ordinary work. It has advantages over some other systems of testing when applied to a building where the fixtures are in use, as the smoke is very penetrating and the pressure, being very light, does not disturb the water seal in the traps. The smoke gives off a very pungent odor and, with the slight pressure applied by the machine, will force itself out in little puffs wherever a leak is found.

Who Should Make the Connection?

From X., New York.—Will you kindly inform me who should make the connection between the water back and the boiler when the range and water back are furnished by a range dealer and a plumber has a contract for the plumbing work? In placing the ranges in a new building, in New York City, does the work of connecting the water pipes from the horizontal boiler over the range to the water back placed in it belong to the plumber when he has a contract for all the other plumbing work, or should the work be done by the party who sets up the range? In my opinion the range man is only required to set the range in position and connect it with the flue, the plumber making all water connections. Am I right?

Note.—We shall be glad to have our readers express their opinions on this subject. It would seem that so important a matter should be specified in the contract of either one or the other of the tradesmen and should not be left open to the customs of the trade in the city.

Tin vs. Galvanized Iron for Gutters.

From M. A. B., Sullivan, Ind.—Will the readers of *The Metal Worker* give their opinions regarding the relative value or durability of "Old Method" IX roofing terne and No. 26 gauge galvanized iron when used for gutters and valleys? The prevailing idea here among our local contractors and builders is in favor of galvanized iron, but

we contend they are in error. Would like the opinions of those having had experience in the matter.

Fan and Furnace.

From FOUNDRYMAN.—I have been noticing the drift of the furnace trade and am inclined to think that it has reached the parting of the ways. For a number of years the old method has been good enough with the best heating men, and the ambition of some has simply been to get prices down lower and to make price the sole argument in soliciting work. There have been, however, a number of furnacemen, widely separated, who have been eager for a more intelligent method of calculating the requirements of a heating plant, and without any opportunity of discussing the subject together they have been working separately to the same end. It is probable that some, in fact a large number, will always follow the present thumb rule, guess work, method of laying out a furnace plant, depending on personal judgment as a guide. I think it is just as probable that the men who understand the velocity of air currents, the difference in the weight of air at different temperatures, and who calculate the quantity of air heated to a given temperature that would be required for a given room have gradually absorbed the more profitable portion of the furnace business.

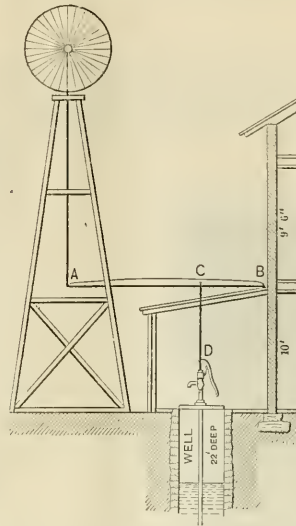
Articles leading in this direction have already appeared in print, and the heating engineer is devoting some of his valuable time to the study of the furnace system as a method of heating. In my opinion some of the reasons why furnace heating is so popular are its reasonable cost and the fact that it furnishes an influx of fresh, pure air. The dissatisfaction with some furnace plants can be directly traced to the lack of provision for the air to pass out of the building to make room for fresh, warm air. The irregular pressure in the cold air box due to the force of the wind has always made more or less trouble. I recognize two things which have come to my attention within the past year as of special importance in showing the tendency of the times. One is a system of ventilation in connection with a furnace, which by means of small pipes brings the air from the lower portion of the room to a chamber above the furnace, where, by means of the usual waste heat, it is raised in temperature and discharged into a ventilating shaft, which is built next to and warmed by the smoke flue. The other system which has attracted my attention was the fan and furnace system shown in *The Metal Worker* of May 25. There is every reason why this method should be more largely used for church heating and in other public buildings. The cost should not be a feature of disadvantage. That such a plant would cost double the price of a plant installed on the old system is probably true. It is equally true that in many churches the old system is repudiated, and a steam or hot water system, which probably costs more than the fan and furnace system, is used, which goes to show that it is not price alone which decides which system shall be used. The furnaceman who stands at the parting of

the ways and desires to take the right way will make a careful study of the use of fans in connection with furnaces, and will impress upon the builder, architect and client the importance of providing some means of ventilation so as to increase the advantages to be derived from the fan and furnace system.

How Can a Windmill be Attached?

From G. H., New York.—In reply to the inquiry from J. G. S., Norristown, Pa., which appeared in *The Metal Worker*, June 15, I would offer the following suggestions for an indirect connection for a windmill and pump, which I hope may prove useful to him. The bell crank shown in the sketch is a convenient and cheap method of connection. The bell cranks may be made of cast iron from a pattern that may be made by any carpenter; a forging, or may be made of heavy sheet iron with stiffening braces foruing the pin bearings. If the mill is at a distance from the house, say 100 or 200 feet, a No. 8 iron wire may be used to advantage with two or three supports on poles to keep the wire from sagging. In this arrangement, a counter weight, as shown at C in the cut, must be attached to the pump rod connection to keep the wire taut and carry the bucket down in any single acting force pump. If a double acting force pump is used then the T-shaped bell crank shown at E must be used, for in this class of pumps the pressure is alike in both up and down stroke. If the weight was used in this case it would need to be too heavy for the operation of the windmill. The wires should be tightly stretched, with the use of the T bell crank, to prevent lost motion. The connection with the head of the pump handle may

From BENNETT BROTHERS, Baltimore.—If "J. G. S.," Norristown, Pa., whose inquiry appeared in *The Metal Worker*, June 15, will put up his windmill like the drawing it will work all right. Let the rod from the

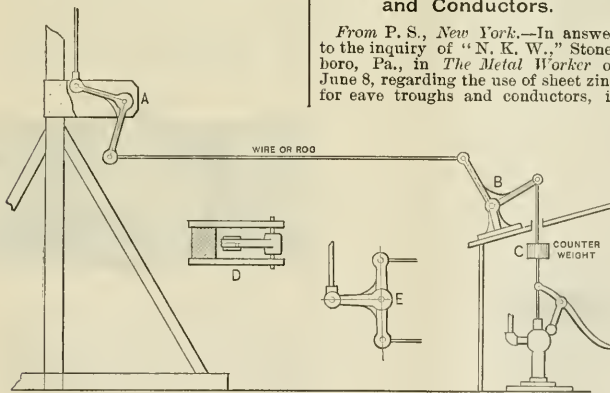


How Can a Windmill be Attached?—Plan Proposed by Bennett Bros.

will come down to the beam at A. Hinge the beam to the house at B, and run a rod to the pump D from C.

Sheet Zinc for Eave Troughs and Conductors.

From P. S., New York.—In answer to the inquiry of "N. K. W.," Stoneboro, Pa., in *The Metal Worker* of June 8, regarding the use of sheet zinc for eave troughs and conductors, it



How Can a Windmill be Attached?—Plan Proposed by "G. H."

be made with a wide yoke or Y clip, as shown at D, and a long bolt inserted to pass through the three pieces that form the joint. If at any time it becomes necessary to run the pump by hand, slipping the Y clip off, by withdrawing the bolt and keeping the pump handle connected, will be a quick way of disconnecting the mill. Where the windmill can be set within 25 feet from the pump a wooden rod makes the best connection, in which case the counter weight C will not be needed for any class of pump. The relative length of the arms of the bell cranks may be so arranged as to suit any length of stroke in the pump or mill.

appears that your correspondent has neglected an opportunity of determining the efficiency of the article by not examining the job of zinc work in his place that has been in use for about eight years. The condition that the above mentioned job is in would do more to determine the value of zinc for the purpose than volumes of theory. Speaking on general principles, zinc is not adapted for outside work, as heat softens the metal and cold makes it hard and brittle. The heat required for soldering appears to change the structure of the metal and causes it to become weak or rotten. On this account the trough might be so weakened

at the joints as to break. Zinc might be employed for eave troughs by using hangers that are not attached by soldering, and having them near together, thus doing away with any liability of sagging between supports. If sheet zinc is to be used for eave troughs and conductors there should be two or three times as many supports as are usually used for tin or galvanized iron.

From B. M., Milwaukee.—If "N. K. W.," Stoneboro, Pa., lives in a town where there is so much sulphuric acid derived from the coal used that tin or galvanized iron eave troughs and conductors will not last over two years, it is a question if sheet zinc would prove durable. Would it not be a good plan to use sheet copper for the purpose, even if it is somewhat expensive?

Soldering Aluminum.

From JOHN H. ROBERTS, Muncie, Pa.—Answering the inquiry of "D. L. W.," which appeared in *The Metal Worker* of June 15, regarding the soldering of aluminum, I desire to say that I have a solder and flux that will join aluminum to other metals or to itself, making a good durable joint. The process calls for no other tools than belong to any timer's set.

Tarred Paper Under Roofing Tin.

From EBERTS BROTHERS COMPANY, LIMITED, Detroit, Mich.—In reply to the inquiry of "A. S.," Paris, Ill., which appeared in *The Metal Worker* June 15, we would say that tarred paper will injure metal roofing. The best kind to use is red rosin sized or dry felt paper. This has been our experience.

The seventh statistical report of the Interstate Commerce Commission, which has just been submitted, covering the fiscal year 1894, shows the total railway mileage of the United States at that time to have been 178,708, an increase during the year of 2247 miles, as compared with an increase of 4897 miles in 1893. During the year 1570 locomotives and 30,389 cars were fitted with train brakes, and 1197 locomotives and 34,186 cars were fitted with automatic couplers. Nevertheless about 72 per cent. of the total equipment are still reported without these safety appliances. The law requires that all equipments shall be supplied with these appliances before June, 1898. The total number of railway employees on June 30, 1894, was 779,608, a decrease of 93,994, and less than in any year since 1890. The total amount of railway capital reported on June 30, 1894, was \$10,796,478,813, an increase of \$290,238,403. The gross earnings of the railroads for the year showed a decrease of \$147,390,077, or nearly 12 per cent. Railway employees killed during the year numbered 1823, and 23,422 were injured, as compared with 2727 killed and 31,729 injured in 1893. At the close of the period covered by the report, 102 roads, operating upward of 42,000 miles of line and representing about one quarter of the total railway capitalization were in the hands of receivers.

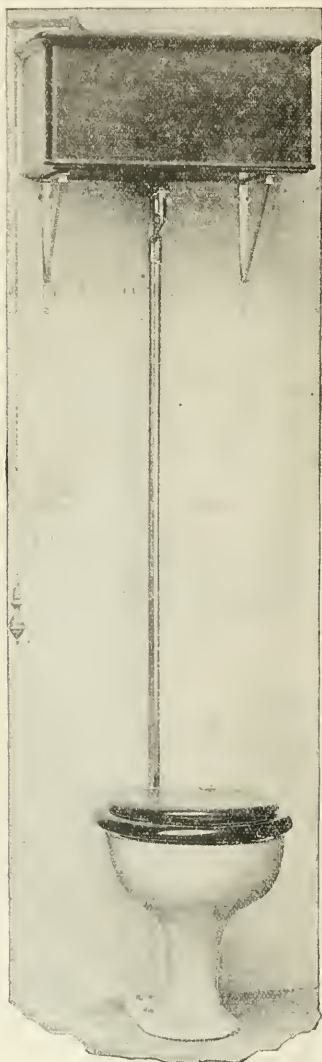
The United States Consul at Bahia, Brazil, reports that a coaling station, capable of storing 10,000 tons, is under way at that port. He also reports the manufacture of cotton to be in a flourishing condition there. One mill, which has 720 looms, is about to increase its capacity to about 2000 looms.

PLUMBING and GAS FITTING.

The Belmont Water Closet, with Seat Attachment.

The Dececo Company, 146 High street, Boston, are putting on the market a handsome, strong and hygienic

tact between the metal and the earthenware and to take up vibration in case the seat is dropped. This method of seating, it is claimed, gives the minimum amount of wood work and leaves the rear of the closet accessible for



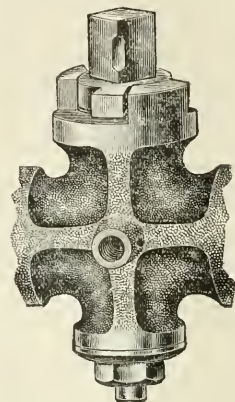
The Belmont Water Closet with Seat Attachment.

combination water closet, illustrated herewith. The seat is attached directly to the closet by means of a bolt hinge which passes through heavy lugs of earthenware, into which has first been passed rubber sheaths to prevent con-

cleaning. This combination includes a perpendicular entrance of the flush pipe into the earthenware by means of a slip joint connection without offsets, and secures the full benefit of the "head" of water from the tank.

Wolff's Cross Bar Stop and Waste.

Illustrations are herewith given of the new stop and waste which is being manufactured by the L. Wolff Mfg. Company, 93 West Lake street, Chicago. In designing this new pattern, the manufacturers were actuated by a



*Wolff's Cross Bar Stop and Waste.—
Fig. 1.—Showing Cross Bar.*

desire to give the plumbing trade not merely a novelty but something possessing peculiar merits and advantages. They adopted, for instance, the

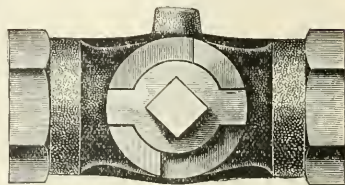


Fig. 2.—Showing Double Check.

plan of putting extra metal in the form of cross bars at right angles along the line of the center of the stop, as shown in Fig. 1, to give it great additional



Fig. 3.—Square Socket.

strength. The cross bar is a feature of the entire line, which covers designs for connecting with lead pipe, lead and iron pipe with one end threaded or iron pipe exclusively with both ends threaded. Another feature introduced

for the purpose of adding strength is a double check, Fig. 2, presenting a top view of the stop to show the manner in which the check is made. There would seem to be no danger whatever



Fig. 4.—Tee Handle.

of this check getting out of order or wearing so as to require care in shutting off or turning on the stop.

Sockets are furnished to enable any kind of a handle to be used. Illustrations of the sockets are given in Figs. 3, 4 and 5. These sockets, as will be seen, can easily be fastened to the



Fig. 5.—Gos Pipe Socket

shank of the stop. In addition, a lever handle can also be used, which is fastened directly to the shank. All the handles are interchangeable. The stop is also reversible, being easily changed from right to left or vice versa.

Would Not the Interests of the Master Plumbers be Served by an Agreement that They Should Not Handle Tools?*

BY JOHN J. FOY, ST. LOUIS.

We will assume for the sake of illustration that at the reading of this essay we are in some mythical city, and for convenience sake we shall christen it "El Dorado." We find the master plumbers enrolled in an organization whose principles embody "The Advancement of the Plumber's Art," "The Promotion of Social Intercourse Among its Members," and "Protection to its Members in Buying, in Selling, and in Competition." We also find the journeymen plumbers enrolled in an organization with principles embodying the vital ideas of the other, and insisting on a standard scale of wages being paid its members for their labor, that being the method of protection most easily applied to them in the sale of their labor. We will now assume that all master plumbers are paying their employees this standard scale of wages referred to. Thus from the point of view of both master and man, to use a more democratic and more fitting expression, "Employer and Employee," we have an ideal city, one in which the "Good" shepherds of the respective organizations have only to look to the welfare of their flocks from within, since there are no stray sheep outside. I have thus far observed a duality of form in reference to the organizations, because I desire our advanced thinkers and reformers to remember that complete satisfaction as to mechanical excellence or financial emolument cannot be attained without both the employer and employee have arrived at conclusions of mutual value to one as to the other.

* Presented at the Thirteenth Annual Convention of the National Association of Master Plumbers, held in Philadelphia, June 11-13.

THE IGNORANT JOURNEYMAN.

In treating the question proposed in an affirmative manner, which I do from purely conscientious motives, and from a sincere desire to elevate the calling to which I have devoted my life and talents, it will be necessary for me to severely censure an element in the ranks of journeymen plumbers—the element without whose existence the question herein treated would never have found birth. The balm I have to offer the honorable and worthy journeyman is that the production of that class I propose to censure is due to the class of employers whose workshop is a training school of ignorant youths, from motives of monetary greed, and who of necessity grow up into ignorant and unskilled men. And now to come nearer to my subject in its individual phase. Let us accompany one of these young men, who, after having served a haphazard apprenticeship of five or six years, finds himself forced, through the strength of organized labor, to become one of their members. His teachers in the intricacies of the craft have been usually boys or young men as ignorant or more ignorant than himself, and even granted that his master may have once been a representative mechanic, the methods of cheap construction adopted by those men have kept him from imparting any of his knowledge to his apprentice. He finds himself in the labor market, completely unprepared as to the value of his work as the more favored youth with the advantage of early education, of apprenticeship under a firm where his associates had been skilled mechanics and whose employers were proud of the character of their workmanship. His poor ability quickly becomes known, and he receives employment only at such times as the demand for labor is in temporary excess of the supply.

BECOMES A MASTER PLUMBER.

At the end of a year, or probably two, he realizes that the unsteadiness of his employment does not average in financial results little more than that of the poorest laborer, and it is then that he turns longingly to the position of "master plumber," feeling that he can surely secure sufficient work to keep himself employed, and to rid himself of the necessity of receiving more wages than he is capable as a mechanic of earning. Only too often we find him, though nominally a "master plumber," simply the employee of some general contractor or building speculator. He is a workman upon their buildings, putting up the material purchased with their money or credit, as a mere informant to their ideas of cheapness and appearance as the laxity of the plumbing inspector will admit of. He is unfair in competition with the employer who must pay for his labor. He is unfair to the workman who would have secured employment had the contract been secured by a legitimate firm; he is unfair to all classes of building trades and arts, since he is paying the way for the speculator and the miser to hire his labor direct from the masses to construct work according to his ideas of show and economy, and not of thoroughness and excellence; and lastly, as the precursor of such a system, not only in our own trade but in others, he becomes a menace to our modern civilization, to that progressive class of builders who have astonished the world, and who in a single century transformed American architecture in its every detail from the primitive log cabin of the colonist to the beautiful and highly welcomed the foreigner at the "White City" and that to-day adorn every city of our common country. There is a thrill of pride in the heart of every citizen at such glorious progress, and the man or men who would undo our work of care and sacrifice, who would lead us backward and not forward, should be thrust aside. It is a duty we owe not only to ourselves but to the good name of our country. He is the type of man whose existence in our midst has made necessary the question I am treating, and in writing of him I presume it has become evident that I am convinced the master plumber should not handle tools.*

WHEN HE MAY HANDLE TOOLS.

There are some circumstances where this rule may be honorably ignored, and to show just how and when it becomes necessary for me to treat of another type of master plumber, who is the direct opposite of the one already treated, we will refer to that type of journeyman plumber who after an honorable career as an employee develops the ambition to secure a footing in business life. This man will take pride in doing good work, in employing skilled labor and

in the general upbuilding of the trade. He feels that success in business life is incident always to "a survival of the fittest," hence his first efforts are to build up a reputation as a master mechanic equal to the one he possessed as an active workman. He has been a faithful member of his organization in the past, and his close communion with labor problems and his vigorous attitude toward the warmth of friendship and manhood they desire to foster make him good material in business life for his development into an honorable competitor for trade, a just adversary in debate and a loyal, honest friend to all who deserve his consideration. He is of the type who will strive to place our calling in the proudest niche of mechanical arts. He will not employ unskilled labor; will not use poor material where better has been specified, and he will not lie about nor traduce the character of his competitor. He started at the lowest rung of the ladder and received his education in the school of skilled and intelligent labor, and her graduates are always men. This man may occasionally take off his coat to perform some unusually difficult task, to teach some less skilled brother some simple "trick of the trade," or to map out a system of work for his employees' benefit, or more often of the make "an unusual argument" which seems to be the spice of the practical plumber's life. For these digressions we can all forgive him, since they promote the general good. They result from his natural pride as a man of practical ability, and since it is an honest pride let us join in it with him and wish him an ever successful career a hearty god-speed. If my words have produced, as Bill Nye would say, a "slight commotion in your think tanks," then they have not been unproductive of good. One thought borrows another, and every intelligent mind will see that a solution of the apprentice problem is really the solution of all the ills incident to the plumbing trade of to-day. Rid ourselves of this incompetent and ignorant mechanic by governing the class from which he is produced and better days will quickly dawn for every one connected with the plumbing trade. Remember, there is nothing impossible to those who will.

"All are Architects of Fate,
Building up the walls of time;
Some with massive deeds and great,
Some with ornaments of rhyme.

"For the structure that we raise
Time is with material filled;
Our to-days and yesterdays
Are the blocks with which we build."
— Longfellow.

New State Association.

A State Association of Inspectors of Plumbers has been organized in Worcester, Mass. These inspectors met at the office of the local Board of Health, and adjourned to the Washington Club House at the lake: W. A. Ford of Cambridge, Philip Connealy of Watertown, M. B. Coleman of Newton, Frank Tower of Springfield, D. S. Callahan of Marlboro, John F. Bresnahan of Fitchburg, Joseph A. Murray of Holyoke, A. L. Moody of Waltham, D. S. Green of Somerville, J. H. Lynch of Fall River, Wm. Connors of Lowell, G. A. Andrews of Medford, J. H. Cullington of Lawrence, Geo. Chamberlain of Lynn, John F. McCartney and J. F. Hurley of Worcester. Dinner was served by the Washington Club chef, after which an organization was formed by the choice of these officers: President, Philip Connealy of Watertown; secretary, W. A. Ford of Cambridge; treasurer, J. F. McCartney of Worcester. A Committee on Constitution and By-Laws was chosen, consisting of J. F. McCartney of Worcester, Joseph A. Murray of Holyoke, D. F. Callahan of Marlboro and A. L. Moody of Waltham. Letters were received from inspectors in various cities and towns, who were unable to attend the meeting, but who indorsed the movement for organizing an association. The meeting adjourned to Wednesday, September 4, at Boston, when action will be taken on the adoption of a constitution and by-laws.

To What Extent May Municipal Legislation be Relied upon to Enhance the Standing of Master Plumbers? Is it not, in some cases, a Bolster and Endorsement of the Unworthy?*

BY JOHN L. E. FIRMIN, SAN FRANCISCO.

It is true that the prime, moving cause of our organization was the betterment of our condition in dollars and cents; but it is also true that immediately upon the consideration of our environments we became convinced that to bring the desired result about we must take strong and active steps toward elevating the standard of practical sanitation. We found that our business had gradually become so demoralized that, aside from a few favored representatives, we were conducting our affairs without system, scale, gauge or rule; for instance, we were acquainted with the principle of sanitary plumbing; in a measure we understood the scheme of ventilation, &c., but in the general application of these principles we stood almost at zero. For the public had not been taught the benefit of sanitary plumbing. Secondly, the ruling conditions and customs placed in the hands of the architect all these powers of "luxury, favoritism, and even competition" under which, possibly, we now suffer, but with this difference, that then the abuse was carried to a much greater degree. I do not say this with a view to cast reflections upon architects, as such, any more than I do upon plumbers as plumbers; both became corrupted, and that to such an extent that when we figured upon plans and specifications of certain jobs each of us would probably figure upon a basis of not what we should do, but upon what we could avoid doing. In other terms, every condition and surrounding favored dishonesty, favored the man least troubled with conscience, thus thrusting honesty into the background. As above stated, we readily discovered the needs of the hour, among which it seemed to us was the creating of a standard, or, as a scientist might term it, a "unit." We had no starting point, no gauge, no rule, and so we created the plumbing laws.

PLUMBING LAWS.

Immediately we found—what? That in a great measure they removed from a certain portion of our work a feeling of ambiguity; for instance, placing our rough work within tolerably well defined lines, and that in a lesser degree they influenced the general tone of specifications. In fact, it seemed generally admitted we had taken a proper step, but in time a danger developed, a great danger both to ourselves and the general public. That danger was and is overconfidence upon the part of the architect and the general public, on the "cure-all-ism" of the plumbing laws. We found that the public had come to rely in a dangerous degree upon the plumbing laws to supply not only the basis but the whole superstructure of modern sanitary plumbing. Practically they ignored the individual efforts of the enlightened and progressive plumber and threw their whole faith upon the law; therein they injured both themselves and us. It is our duty to educate the public to thoroughly understand the underlying principles that the plumbing laws in themselves are good just as far as they go and no further. "There are many ways of killing a cat beside choking him with butter," and the law may be obeyed while at the same time it is practically avoided and violated. No matter how impartial, honest and competent an inspector may be, in the very nature of things there are one hundred and one ways of "putting his eyes out." The public should remember that the majority of laws are framed with a view of preventing the straight going crooked and straightening the crooked, and that upon the application of law the crooked immediately set about to devise means to avoid the penalties of violation; on the other hand, honesty complies, not only with the letter, but with the spirit of the law. Plainly, then, portions of our craftsmen who are endeavoring to be just to their fellow men; that portion who have fully given their best thought in devising improved methods of practical sanitation; that portion of us who can point to

the improved standard of plumbing to-day as part of our labors, have not been rewarded in anything like a just ratio, and I might even say that in an every day dollar and cents view have not directly benefited at all; still as a whole we have. For example, I would point to the many well conducted and appointed plumbing establishments which you may find scattered all over the country, as against the rat hole cellar of a shop which even now we too often see.

BENEFITS OF HONEST METHODS.

It cannot be that any great portion of the well appointed shops are the result of dishonest methods—I cannot think it—but we know they have developed only since our organization and the adoption of plumbing laws. The danger lies—both to the public and ourselves as business men—that the public have come to believe that all plumbers, by virtue of the law's operation, are compelled to produce equal and certain results, and that if they have a certain piece of work to be performed it will make no difference whether they give the job to Jones or Brown, because in either case the law steps in and demands the work shall be performed in a certain manner. Therein they fall into error, injuring themselves as well as the honest plumber; they remove the incentive to progression and honesty.

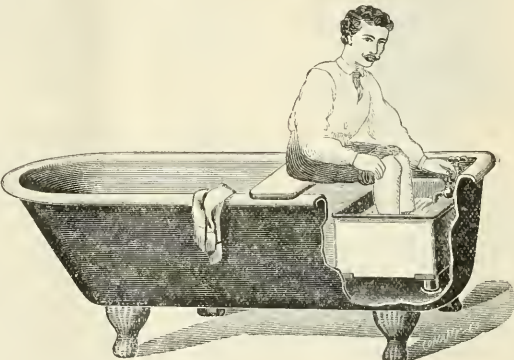
Be ye ever so learned, a judge who reads and administers the law with favoritism is the essence of corruption. A wise and impar-

into the realms of that abstract philosophy, political economy, it might be well for us to remind ourselves of the fact that we, as part of the people, are suffering from—we know not what, but that the ailment is called "general depression," and that if we were wise enough to prescribe a true remedy for that complaint we would at the same time lift a country out of a "slough of despond."

Let us not forget that while we owe a duty to ourselves and families, and that in justice to them we should faithfully labor to improve their and our condition in life, that we owe a still higher allegiance to civilization.

Stephenson's Portable Foot Bath.

The accompanying cut illustrates the portable foot bath made by C. H. Stephenson, Lynn, Mass. This bath is placed inside the bathtub beneath the faucets, connecting automatically with bathtub waste, having chain and plug or automatic shut off attached. The water is drawn into the foot bath from the bathtub faucets and emptied through the waste of same without the water running into the bathtub. The foot bath is made of tin or copper, enameled, and weighs 6 pounds, is 16½



Stephenson's Portable Foot Bath.

tial judge is one of the great factors of civilization. So with our inspectors! And while I have no reason to reflect upon the inspectors of the country, and more especially of this city, still, in the very nature of things there must be dishonest inspectors; then, indeed, are conditions bad for the honest plumber, and there is increased need of care in the choice of your plumbers.

THE FUTURE OF PLUMBING LAWS.

The plumbing laws are the result of the labors of master and journeyman associations and of the sanitary press—an evolution of these combined forces. They are the concrete of years of mental and physical expenditure. They have come to stay; they will not retrograde. We could not, did we so desire, now remove them. They have created a demand for an enormously increased variety and volume of appliances, consequently creating a market for labor. They have improved our craftsmen and tradesmen as such; they have added elegance, comfort and health to modern civilization and society; they are the mainstay of our sanitary press; but they have been relied upon too much by the public and, in a great degree, they have failed to reward their creators.

Whether as a whole they have proved beneficial to plumbers may perhaps be better judged by comparison with communities who are conducting their affairs under conditions of an entire lack of regulating laws, where, as I may say, the state of "Anarchy of Plumbing" exists. Do you here find the relative position of our craft better or worse than our own? From examples I know of as now existing I assert without hesitation that though our condition is bad, that under a similar condition of anarchy it might be very much worse. Without going

inches long, 14 inches wide and 8 inches deep, with 3-inch metal legs that can be folded when used in a bath tub or extended when used otherwise. When used in a tub it rests on rubber corners. It is referred to as extremely convenient in a sick room, as it can be carried to a bedside. It also can be used for taking a mustard foot bath and as a baby's bath.

A STRIKE of the sanitary ware potters at Trenton, N. J., is considered likely to occur before long. Early in the present week the sanitary potteries were closed and the workmen met in conference to formulate a new scale of prices to submit to their employers. It is understood that the men will ask for an increase of pay ranging from 10 to 40 per cent., according to the class of work on which they are engaged. This would make the scale about what it was in April last, when the organized potters voluntarily reduced the scale to meet the prices paid the non-union men. Since that time the non-union men have joined the union. It is understood to be the determination of the men to go on strike if the master potters do not accede to their demands. It is not yet determined when the men will ask to have the new scale go into effect. Dispatches from the West indicate that the operative sanitary ware potters in that section will be governed by the scale eventually agreed upon at Trenton. The number of men involved

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in the Trenton potteries is about 500, or 90 per cent. of the whole number employed in the sanitary ware industry in that place.

Unity.*

BY EDWARD E. SHUSTER, ST. LOUIS.

Should not the master plumber decline to bid as a sub-contractor? Should he not insist that the plumbing be reserved from the general contract?

To my mind no more timely and appropriate question could have been proposed for discussion by the Essay Committee than the above. It is a question which should occupy the mind of every member of this association, as it is of so much importance, especially at the present time, that it would be gross neglect on our part should we permit matters regarding this question to be carried further on if we have any means at hand by which the evil could be remedied.

THE EVILS OF SUBLETTING.

I dare say the subletting of plumbing work by irresponsible builders is one of the greatest evils that have befallen our trade, and should be eradicated at the earliest possible moment. Some one might say, how are you going to stop it? My answer would be, very easily. All that is necessary for us to do is to stand together, one and all, and make an earnest agreement between us by which we positively refuse to bid for any one except the architect or owner. This may not seem to be such an easy matter, but it we give it the necessary attention which it really deserves I haven't the least doubt that it could be easily accomplished. When taking into consideration the good that would result from such an action we come to the conclusion that it would be of such great benefit to each and every one of us that we should do everything in our power to carry it through. Take, for instance, an architect who has drawn plans for a fine job of plumbing in a good residence, and who is really anxious to see some good, responsible master plumber receive the contract for its execution, who, upon approaching the owner with the suggestion to leave the plumbing out of the general contract usually meets with the owner's disapproval. Why? Is it because the owner is not particular whether he gets a good job of plumbing or not? You will find in almost every instance that he expects a first-class job, but he has been informed by some irresponsible builder, who does not care whether he gets a plumber to do a good job or not—so long as he does it cheap—that if he lets the plumbing along with the general contract he can save some money and get just as good a job as if he would let it separately, because all the work would have to be done under the supervision of the plumbing inspector, and that would give the plumber no chance to do a bad job. The owner naturally supposes such to be the case, and from a desire to save all he can on the building is prompted to turn it into his hands to give to whom he sees fit.

The architect not being in a position to demand from the owner that he pay more than he can get the work done for under the builder's contract, has no way to demonstrate to him that the money additional for a really first-class job would be money well spent, and as the owner does not seem to be very particular as to who really does the work, seeing a chance to relieve himself of a portion of the responsibility he would otherwise have to bear, the architect yields and the job goes to the cheap man who works for the builder.

THE CHEAP MAN WHO WORKS FOR THE BUILDER.

Let me try now to define what and who I mean when I speak of the cheap man who works for the builder? I suppose I need hardly mention it and you know already who I mean. I mean every one who is today engaged in the plumbing business and who is compelled to go out among these so-called builders and seek employment. And why do we take sub-contracts from them, and take them at a price wholly out of proportion to the amount of work to be done?

I believe I can explain it. It is the result of our giving estimates to every one asking for them, regardless of who they may be or whether they are responsible or not. I even know of builders receiving bids from

plumbers totally unknown to them and whom they have never asked to bid. This is a practice which should by all means be stopped. If we cannot stop bidding for builders we can at least restrain ourselves to bid only when asked to do so.

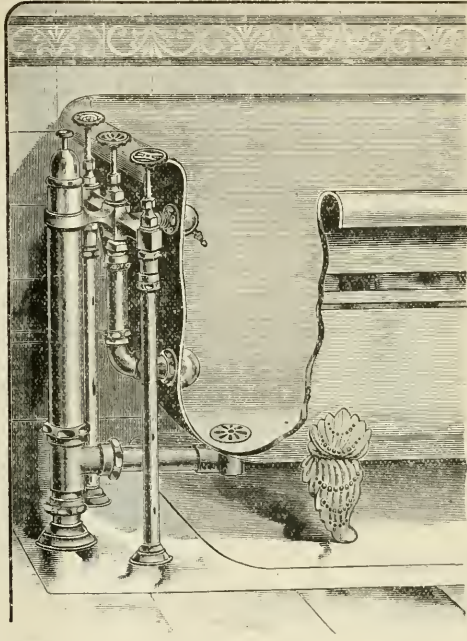
What are the majority of "builders" of to-day? Are they not men who will come to us, after we have submitted our bid, and tell us that Mr. So-and-so is so many dollars cheaper than we are and if we can meet that price we can have the job? Gentlemen, you all know they will, and if we meet the price and take the job we will be lucky if we come out even and do not lose money on it. Then why should we not try to confine our bids to architects alone? Why should we bid for people who use every means in their power to cut our prices and then take chances on getting our pay when we are finished?

I am well aware that there are honorable and upright men among the builders whom we must respect and to whom I would submit my bid as willingly as I would to

and submit our bid, and will not be compelled to send bids to ten or twelve builders who are bidding on the same job.

I do not wish to be understood as though I had no faith in plumbing inspectors and that their supervision of the work would not be of any benefit to the owner. On the contrary, I am confident that when the inspector does his duty and insists on the work being done properly it will be productive of much good, but there are a great many things necessary to do a first-class job which do not come under his supervision and which he is not responsible for, and yet they are of so much importance that they cannot be omitted.

And therefore we should always insist on getting the necessary remuneration for a job of work that will enable us to furnish all these necessities and do the work not only to the satisfaction of the owner or architects, but also to our own satisfaction, so that we may have a clear conscience when we get through with our work, knowing that we have done everything in



Morrison's Bath Fixture.

an owner or architect, knowing full well that if I was the lowest bidder I would be awarded the job. Yet I believe that in submitting our bids only to architects we would benefit them and would meet with their approval, as they are not anxious to sublet the plumbing and would rather have it off their hands. The only one who wants it all included is the one who will peddle it out, and who will sell out at any time if he can make a \$3 bill by the operation.

SEND BIDS TO THE ARCHITECT.

Shall we humble ourselves to these people any longer and give them a chance to still further cut down our prices? No, gentlemen, not if we know ourselves. We have the remedy in our own hands. Why not make use of it. Why not submit our bids only to architects. If we do that the natural result will be that the "peddler, or skin builder," as I name him, will be knocked out, and some of us will get the job, and owing to the fact that we would get a price consistent with the quality of the work would be enabled to do it right. And now I ask you, gentlemen, would it not be better for us all if we got only work of this kind? Therefore, gentlemen, let us come together, make an agreement and live up to it, and we will see the beginning of a new era in the plumbing trade. Every one will be benefited alike, and bidding will be very much simplified, inasmuch as it will be the saving of time and money for us if we can go to the architect, figure our work

our power to do what is right and have omitted nothing.

Morrison's Bath Fixture.

The accompanying illustration shows a portion of a bathtub with Morrison's bath fixture attached, a specialty that has been brought out by the A. Y. McDonald Company, 164 Lake street, Chicago, Ill. The fixture includes standing waste, low down bell or silent supply and top supply, which can be used for shower. It is particularly noted that with this fixture provision is made for both top and bottom supply, either of which can be used at will. There are no solid or screwed joints, as the entire fixture is put together by slip joints. It will fit any tub that has not been drilled for cock or overflow, and can, it is said, be attached in 15 minutes. Compression cocks are used, thus doing away with air chambers, and the seats of the compression cocks are removable for repairs.

ANGUS MCINNIS and CHARLES E. THORNE have formed a partnership for the purpose of carrying on a general

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plumbing, gas fitting, steam, hot water and hot air heating business in Charlottetown, P. E. I.

New Regulator for the Welsbach Lamp and Other Gas Burners.

The rapid steps the Welsbach lamp has taken in the gas line lends interest to any device to be used with it. The Davis & Stevens Mfg. Company of Seneca Falls, N. Y., have placed on the market a little regulator to be used with the Welsbach, which they claim will considerably lengthen the life of the mantle, as a steady pressure is assured.

This regulator, a cut of which is shown herewith, has an automatic ac-



New Regulator for the Welsbach Lamp and Other Gas Burners.

tion, can be applied to the Argand, Morey or any gas lamp or burner, and is claimed to save at least 25 per cent. of the consumer's gas bill, and is sold at a very low price.

TRAPS AND VENTS.

DETROIT gains an excellent citizen for the coming year in W. E. Crosby, executive clerk of the National Association of Master Plumbers, who will make his headquarters with the National President, James Meathe. The trade press have found Mr. Crosby a very straightforward and courteous official, and wish him success in his labors under the new administration. With the plumbers of the oratorical and statesman type, as well as with the quiet and hustling sanitary tradesmen, he is well known and highly esteemed.

THE WORKS of Randolph & Clowes, Waterbury, Conn., were partially destroyed by fire Thursday morning of this week. We are advised by them, however, that the damage will cause little or no delay in filling orders of their customers.

THE SANITARY WARE POTTERIES at Trenton, N. J., which were idle for some days last week, were again put into operation on Tuesday, the manufacturers and the workmen having agreed on a new scale of wages. This scale gives the operatives an advance

rating from 10 to 40 per cent. over the wages recently current. The greatest advance is made on staple goods. The workmen, among other demands, asked that a shop committee should be appointed by themselves to fix the prices to be paid for all new shapes. This the pottery manufacturers were unwilling to concede, arguing that it would result in allowing the workmen to run the business.

JAMES MEATHE, Detroit, Mich., the newly elected president of the National Association of Master Plumbers, is second vice-president of the National Association of Builders.

HERMAN A. PHILLIPS, the permit clerk of the Water Department, Chicago, Ill., has turned over the names of 150 plumbers who are delinquent in taking out their licenses to Chief Badenoch. All of these made application for permits in January last, but have failed to pay the required license fee of \$25. They are liable to a fine of not less than \$10 nor more than \$100 for failure to pay, and the names were turned over to the Police Department in order that warrants might be taken out and the delinquents brought into court.

THE SIMPSON PLUMBING COMPANY have been incorporated at Chicago, with a capital of \$3500, by David Klotter, John W. Simpson and Josephine Klotter.

THE PLUMBING SUPPLY HOUSE of F. J. Letcher & Co., 308 Grove street, Jersey City, N. J., had their safe opened and robbed last week.

FRANK A. STANLEY has removed his plumbing establishment to the Simmons Block on Second avenue and Walnut street, Pine Bluff, Ark.

N. E. WALSH has removed his plumbing business into new quarters at 520 West Locust street, Des Moines, Iowa. Mr. Walsh was engaged in the plumbing and steam heating business in Des Moines 20 years ago and for nine years he conducted an extensive business. In 1882 he moved out to Helena, Mont., where he was engaged in his old business for eight years. He returned to Des Moines two years ago, and has engaged the patronage of many of his old customers since, and has made many new acquaintances. He is now prepared to do all work in the line of plumbing, steam and water heating.

JAMES M. CLANCY, Danvers, Mass., will occupy the lower part of the building recently vacated by Caskin & O'Connell for his plumbing business.

WOOD & McDONOUGH have opened a plumbing establishment on the corner of Lafayette avenue and Tenth street, Mountsville, W. Va.

A FIRE which visited the Pfau Plumbers' Supply Company, 138 Hunt street, Cincinnati, Ohio, on June 15, caused damage amounting to \$3000.

SANITARY INSPECTOR SULLIVAN of the New York Health Department recently made a report on the condition of the Custom House, in Wall street, which has been forwarded by the Collector of the Customs to Washington. In his report Inspector Sullivan condemns the plumbing and ventilation of the building. He states that repairs to the existing system are impossible, and that there must be renewals. The inspection was made because of frequent complaints of offensive smells made by persons employed in the building and by visitors whose business took them there. The health of the Custom House employees, too, is said to have suffered to a large extent.

KIRTLEY BROS., Kansas City, Mo., are sending to the trade a neatly printed pamphlet fully describing their

improved system of water works operated by compressed air. This system is known under the name of the Domestic water service, and is referred to as being practicable, durable and simple. This system is principally intended for country homes, business and public houses which are distant from water mains.

W. H. CLAY, who has been connected with the Barlow Bros. Company for the last 15 years, has opened a plumbing establishment at 84 South Main street, Waterbury, Conn. He will also engage in hot water heating and general jobbing.

C. SULLIVAN, Newark, N. J., has returned from the convalescence laden with honors. He is State Vice-President of the National Association of Master Plumbers for New Jersey. He is also State Vice-President of the Steam and Hot Water Fitters' Association of the United States for New Jersey, and is Chairman of the Protection Committee of the Newark Association of Master Plumbers. Mr. Sullivan carries his honors easily and is an efficient worker.

THE HOLLY BATH TUB COMPANY, Holly, Mich., are issuing a four-page circular showing the Day portable and folding bathtubs with instantaneous bath heaters which they are manufacturing. The illustration on the first page shows the bathtub in a horizontal position ready for use, with the water heater arranged in the case of the bathtub. The second illustration shows the tub closed as it is when not in use. The illustration on the third page shows the sheet metal tub with the burners for heating it arranged on the under side; and it is said that a bath may be heated in from 7 to 15 minutes. The last page shows their instantaneous heater arranged against the wall, adapted for use in connection with any character of bathtub. The heaters are adapted for use with gasoline, coal oil and either artificial or natural gas. The illustrations show that the goods are attractive in design, and it is claimed that they are both durable and efficient in use. Dealers in suburban districts can doubtless bring these goods to the notice of their customers with profit.

JAMIESON & MCKINNEY, Ithaca, N. Y., are removing the plumbing and heating apparatus from the Noble Building preparatory to its being taken down to make room for the Trust Company's new structure.

AMONG the plumbing establishments recently started in Chicago can be mentioned the following: Butler Bros., 5214 Lake avenue; A. Mourant, 345 Forty-third street; Charles P. Hagerty, 1120 George street; Kingston & Curran, 250 Centre avenue; Ward & McMahon, 2859 State street.

JOSEPH ALLARD, Southbridge, R. I., will soon open a plumber's shop in the Deleahanty Block.

W. H. HITCHCOCK, who has been in the plumbing and tin business at Palmer, Mass., is soon to remove his business to Springfield.

THE AMERICAN GAS REDUCTION COMPANY of New York City have been incorporated, with a capital of \$35,000, to manufacture, sell and rent automatic gas saving regulators. The directors named are Richard B. Schoonmaker and Louis S. Fries of New York City and J. B. Turner of Elizabeth, N. J.

LEE PATTERSON, senior member of the plumbing firm of Patterson & McFadden, Pittsburgh, Pa., died suddenly at Mt. Clemens, Pa., on June 10. Mr. Patterson had gone to Mt. Clemens for

the benefit of his health, but it was not expected that his illness would take so sudden and serious a turn.

THE AUTOMATIC SEWER TRAP COMPANY of New York City have been incorporated under the laws of the State of New York, with a capital of \$25,000, to manufacture sewer traps. The directors are Lewis W. Rope, Garrett C. Hallenbake of Brooklyn, and Walter West of New York.

LERCH & SPANG, 344 Roscoe boulevard, and Grannan & Slement, 663 West Madison street, have recently started plumbing establishments in Chicago.

The Young Men's Institute, New York.

The tenth annual report of the Young Men's Institute, New York City, located at 222-224 Bowery, has just been published. A feature of the work of this institute which is interesting to our readers is the educational department, which has run a very successful course during the past season. The course of study followed in the evening classes held at the institute include such elementary subjects as come under the heads of English grammar, penmanship and arithmetic. There are also, however, trade classes, in which are taught plumbing, mechanical and free-hand drawing, steam engineering, electricity and carriage drafting. In all, there were, in the past season, 12 classes, held every night in the week except Sunday. The total enrollment of scholars was 669 in 1894, as compared with 617 in 1893. The percentage of regular attendance on the part of these scholars has been 78. In the fall of 1894, a class was opened in sanitary plumbing, with Prof. James Temant as instructor. The enrollment in this class was only 9; but, as the class becomes better known, the directors of the institute expect that it will be more appreciated and that the numbers will considerably increase. An excellent display of work done by the pupils in the various classes was made in the building of the institute last month, when the annual distribution of prizes and certificates was held. A display of the pupils' work was also made at the New York State convention of the Y. M. C. A., at Jamestown, and later at the international convention at Cedar Rapids, Iowa. From there the exhibit was taken by the Educational Secretary of the International Committee to the larger associations all over the country, where it has done much to stimulate interest in special work for the mechanical and artisan classes by the members of the Y. M. C. A. The report shows that the institute, situated in the heart of the labor district of New York City, is reaching and benefiting large numbers of young mechanics and artisans who might not otherwise be able to secure the educational advantages which they find in this establishment.

The sanitary plumbing classes are held every Wednesday and Friday, from 7.30 to 9.30 p.m. The course of

instruction is divided into two terms, the coming autumn term being from October 2 to December 29, 1895, and the winter term from January 2, to April 23, 1896. Similarly the other classes are held on two evenings every week. Any young man of moral character between 17 and 35 years of age, may take advantage of these classes upon paying a membership fee of \$4, and an additional class fee of 50 cents per month for steam engineering, electricity, and plumbing. Other classes are 50 cents per term, payable in advance.

Exhibition of Acetylene in Domestic Use.

An exhibition given recently in the house of Edward C. Napheys, 2024 North Broad street, Philadelphia, of the domestic uses of the new gas acetylene, is thus described in the *Public Ledger* of that city: Acetylene is a product of a carbide which is made from lime and carbon (in the form of coal dust), reduced in an electric furnace. The carbide, exposed to moisture, evolves a gas very rich in carbon, which, in the process used, is liquefied, and, being furnished in this form, supplies gas, which may be used in the ordinary way, but with much smaller burners than are commonly used. What the guests saw was a cylinder in the cellar 3 or 4 feet long and about 4 inches in diameter, containing about 50 cubic feet of the gas under considerable pressure. It held what was said to be the equivalent of 1000 cubic feet of city gas. This cylinder was connected with the pipe system of the house, the city gas being cut off. A large number of 1-foot burners in the various rooms on the upper floors were lighted, and the whole house appeared to be brilliantly illuminated, although the number of burners was actually less than would ordinarily be employed.

In the dining room there was a cluster of six or eight, in the sitting room three made the apartment as light as day, and in the parlor four electric lights "paled their ineffectual fires" before four gas burners supplied with acetylene. The flame at the burners was not much larger than the blue part of a batwing burner flame supplied with city gas, but it was intensely white, and the blue part was almost indistinguishable.

There was no doubt about the illuminating value of acetylene and the guests were informed by Joseph A. Vincent that the carbide could be produced at such low cost as to compete with city gas at 16 cents per 1000 cubic feet. The calculation, he said, was the result of tests made by distinguished scientists under unfavorable conditions. The gas could be furnished to consumers from a central station or served in cylinders to isolated houses.

The new battery of pneumatic guns at Fort Winfield Scott, on the Presidio Reservation, intended for the protection of the port of San Francisco, Cal., is now practically completed, but will not be ready for turning over to the War Department until the fall on account of a difficulty having been experienced in obtaining an adequate water supply. For this purpose a powerful steam pumping equipment will have to be put up, as not a drop of water has been found on the site of the battery. The pipes will have to

be run half a mile to tap the nearest conduit, after which pumps must be used to force the water up to the bluff. This battery is composed of three 15-inch guns, and is so situated as to command the whole of the channel leading up to San Francisco.

A dispatch from Washington, D. C., states that, from information received at the Navy Department, there is no doubt that active work will be resumed at the Washington Navy Yard after July 1. On that date the Bethlehem Iron Company will begin delivering the steel gun forgings to be manufactured into naval ordnance. The contract calls for the delivery of all the forgings within 119 days after July 1. The contract is for 10 sets of forgings for 4 inch guns and 20 sets for 5 inch guns. This will give sufficient work to keep the yard busy for some time to come.

The Pennsylvania railroad is credited with the intention of purchasing upward of 100,000 tons of steel rails for use on its system this year. Their tracks are to be put in complete repair, and it is proposed to make, ultimately, a four-track line between Jersey City and Pittsburgh. A number of important alterations are also contemplated in the changing of grades and improving alignments.

The May report of exports, just published by the Treasury Department, shows increases of over \$1,000,000 respectively in the value of breadstuffs, mineral oils and cotton exported last month as compared with May, 1894. On the other hand, provisions exported show a falling off of \$3,000,000 during the month. The total decreases for the 11 months ending May 31, as compared with the same period of last year, were \$52,666,332 in breadstuffs, \$8,714,190 in provisions, \$3,861,971 in mineral oils and \$3,755,890 in cotton.

The new American line steamship "St. Louis" made an average speed of 18.37 knots on her maiden trip to Southampton. As the vessel was not pushed in order to obtain any high rate of speed, and considering the fact that the voyage was accomplished without the slightest hitch of any kind, her performance is regarded as eminently satisfactory.

A Chicago dispatch states that a number of the smaller telephone companies, which have been infringing on the Berliner patents since the decision two years ago declaring these patents void, will organize a national association for the purpose of fighting the Bell Telephone Company in and out of the courts, since that concern have been granted a monopoly of the Berliner patent on appeal.

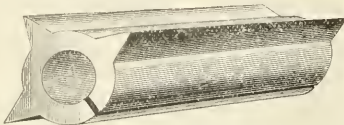
George H. Murphy, commercial agent of the United States at Luxembourg, Germany, reports to the Department of State that a decree has been issued by the German Minister of Public Works discontinuing wherever practicable the use of petroleum at railway stations, in consequence of the rise in the price of American oil.

The Rockefellers are reported to have bought a large section of the town of West Seattle, Wash., including harbor frontage, for the sum of \$1,000,000 in cash.

ROOFING AND CORNICE.

Cook's Expansion Bolt.

The Coburn Trolley Track Mfg. Company, Holyoke, Mass., for whom the Henry B. Newhall Company, 105 Chambers street, New York, are agents, are putting on the market the expansion



Cook's Expansion Bolt.—Fig 1.—Composition Metal Socket.

bolt shown in the accompanying cuts. This bolt, it is mentioned, has been received by cornice makers and sheet metal workers with special favor for fastening their work to brick buildings. In use, a hole is drilled in a brick wall large enough to drive in the composition metal socket shown in Fig. 1. Fig. 2, a cross section, is shown after it has been driven into the hole. Fig. 3 shows the bolt screwed into the socket, and the bolt being larger in diameter

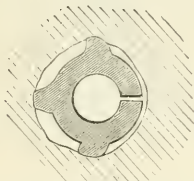


Fig. 2.—Cross Section of Socket in Wall.

than the hole in the socket it forcibly expands the metal into the irregular surface of the hole drilled in the mason work, thereby gaining a very firm and secure fastening. It has been used in connection with signs, fire doors, marble work, balconies and fire escapes with very satisfactory results. The company are now manufacturing a gutter hanger to be used in connection with this socket. The gutter hanger

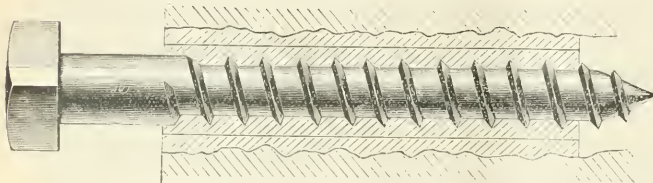


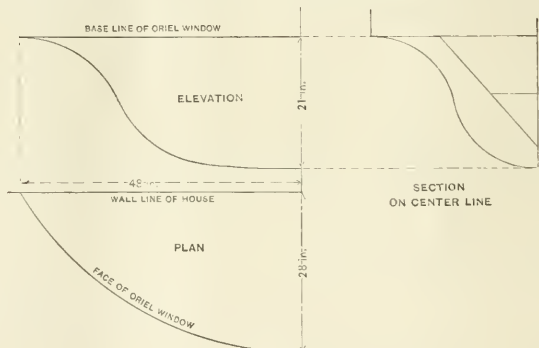
Fig. 3.—Sectional View of the Socket in the Wall with Lag Screw Inserted.

will have a square shank which will be serrated irregularly on the edges, so that after the socket has been expanded the serrations will prevent the hanger from being withdrawn. A similar device will be made for supporting conductor pipe.

Pattern for Base of an Oriel Window.

From A. W. S., Bloomington, Ill.—I inclose a tracing of a base of galvanized iron for an oriel window. I do not find anything in "The Metal Worker Pat-

tern Book" which answers my purpose, and I would therefore ask if some one will give the method of developing the pattern for that shape. The top half is in three pieces and the bottom half in two pieces. I have executed the job and it passed inspection, but it does not



Pattern for Base of an Oriel Window.

suit me at all, and I think if I can get started right I can improve on my "first offense."

Note.—From the sketch submitted by our correspondent we have prepared the engraving presented herewith. It represents an elevation of the base, and at

sketch are those governing the cutting of curved moldings. This is a matter depending upon the judgment of the workman in determining what flare or radius can best be hammered or raised into the profile desired rather than upon mathematical rules. As our correspondent intimates, such a profile can be formed in any number of pieces according to the size of the base in question and the convenience of the workman doing the job.

FLASHINGS.

THE KANSAS CITY METAL ROOFING & CORRUGATING COMPANY, Kansas City, Mo., report an excellent demand for the goods carried by them, and also state that prices are rapidly advancing. They are urging their customers to place their orders early, as they do not think the prices will remain as low as

at present quoted. Among the contracts recently secured by them they mention new roofing for the Union Elevator, Kansas City; also large quantities of roofing for the Sylvia Milling Company, Sylvia, Kan.; McCune Roller Mills, McCune, Kan.; Neodesha Roller Mills, Neodesha, Kan.; Chickasha Milling Company, Chickasha, I. T.; Black Rock Lumber & Cooperage Company, Black Rock, Ark.; and Wellington Star Rolling Mill, Wellington, Mo.

THE LAWRENCE LETTS ELBOW COMPANY, Waverly, N. Y., issue a folded circular calling attention to their O G one piece plain round and corrugated conductor and stove pipe elbows. The folder gives prices of the various sizes and styles of elbows, which are likewise illustrated, and reference is made to their advantages.

THE JEWETT CARBONIZED FELT COMPANY of New York City, have been incorporated, with a capital of \$50,000, to manufacture and sell sheathing papers, roofings, &c. The directors are: Wm. G. Winans and M. H. Winans of New York City, H. H. Jewett of Chatham, N. J., J. A. Smith of Newark, N. J., and Wm. E. Mountfort of Brooklyn.

the right a section showing a profile of the molding which is to be carried around the curve shown in the plan herewith. The only rules governing the cutting of patterns for such forms as are called for by the correspondent's

TIN PLATES.

The Tin Plate Scale.

A conference was held in Pittsburgh, on Wednesday, the 19th inst., at 10 a.m., between the Conference Committee of the Association of Iron and Steel Sheet Manufacturers and the Amalgamated Association, at which the new scale governing wages in rolling mills for the year ending June 30, 1896, was presented. We present below extracts relating to the tin plate scale. The memorandum of agreement is the same as in the old scale, with the exception that a new clause, No. 6, has been added, which reads as follows:

"We hereby agree to supply the undersigned company with skilled workmen within a reasonable time, when desired, to operate their works in the departments governed by rates of wages herein contained."

In tin and black plate mills there is no change down to Nos. 21 and 24. The following table gives the changes now proposed:

Gauges.	Rolling steel, 2240 lbs.	Doubling.	Heat-ing.	Shear-ing.
Nos.				
21 to 24.....	\$1.07	\$1.86	\$1.63	\$1.59
25 to 26.....	4.57	2.07	1.88	1.71
27, 28.....	4.63	2.21	2.05	1.71
29, 30.....	5.39	2.70	2.48	1.76
31.....	5.40	2.84	2.66	1.78
32.....	5.63	2.97	2.79	1.88
33.....	5.99	3.13	2.88	1.98
34.....	6.64	3.33	3.15	2.20
35.....	6.97	3.52	3.34	2.39
36.....	7.45	3.80	3.46	2.46
37.....	7.52	3.65	3.52	2.49
38.....	7.60	3.72	3.58	2.52

An entire new scale for mills rolling black plate for tinning purposes only has been added and is as follows:

Gauge. No.	Rolling.	Doubling.	Heat-ing.	Shear-ing.
21 to 24.....	3.96	1.86	1.63	1.52
25, 26.....	4.00	1.66	1.69	1.52
27, 28.....	4.10	1.96	1.82	1.52
29, 30.....	4.50	2.36	2.17	1.54
31.....	4.59	2.48	2.34	1.56
32.....	4.80	2.60	2.44	1.65
33.....	5.09	2.74	2.52	1.73
34.....	5.64	2.91	2.76	1.93
35.....	5.92	3.08	2.92	2.01
36.....	6.32	3.15	3.03	2.15
37.....	6.39	3.19	3.08	2.18
38.....	6.46	3.26	3.13	2.21

In the foot notes No. 1 is unchanged, and No. 2 has been changed to read as follows: "Shesman on modern squaring shears to receive \$1 per ton. This clause applies only for shearing tinplate." In the extras three foot notes, Nos. 9, 10 and 11, have been added, reading as follows: No. 9, "Catchers on tin and black plate mills to receive 23 per cent. of rollers' statement." No. 10, "When plates are rolled lighter than the gauge represented, the mean weight between that and the next lighter gauge shall be the dividing line between the gauges." No. 11, "Eight hours shall be a day's work on tin and black plate mills." The limit of output is the same as in the old scale.

A new scale of prices for Morewood stacks has been added, as follows: Coke,

tinning 11 cents, washing 11 cents, catching 4 cents, assorting 4 cents. Best coke, 12, 12, 4 and 4, respectively. Charcoal, 12, 12, 4 and 4, respectively. Double rolling, 14, 14, 5 and 4 respectively. Heavy coating, 12, 12, 4 and 4 respectively. O'd style, 15, 15, 5 and 4. Foot notes to this new scale have been added as follows: "Standard: A box of 14 x 20, containing 112 sheets, equal to 81,360 square inches, to be the standard. All boxes weighing over 136 pounds to be paid for as over weight, 112 pounds as basis."

The sheet and tin bar scale is based on 1.1-cent card and the rates are the same throughout. The scale for structural mills, journeymen roll turners and the addenda are the same as in the old scale.

(By Telegraph.)

After a two days' session in Pittsburgh, a wage scale fixing wages in iron and steel sheet mills has been arranged by the conference committees of the Association of Iron and Steel Sheet Manufacturers and the Amalgamated Association. The scale originally proposed by the Amalgamated Association was based on a bar iron card of one and one-tenth cents, and for every advance of one-tenth cent on bar iron the sheet scale was to advance 2 per cent. The manufacturers strongly objected to having the sheet scale based on a bar iron card, and after a long discussion this was withdrawn by the conference committee of the Amalgamated Association, and the new sheet scale agreed upon, based on No. 27 gauge sheets at two and one-half cents, and for every advance of one-tenth cent per pound above this base price wages in sheet mills shall advance 2 per cent. The conference committees of the Tinned Plate Manufacturers' Association of the United States and the Amalgamated Association are now in session in the Conestoga Building, Pittsburgh, Pa.

Further Troubles Ahead in Wales.

It is not improbable that a general stoppage of the Welsh tin plate works may take place at the close of the present month. If a resolution recently adopted at an important meeting of the General Council of the Tin Plate Workers' Union can be enforced there seems to be no other course before the Welsh manufacturers. The option offered to them by the workmen is between a general shut down and a restoration of wages to the original scale adopted in 1874. This scale, the men assert, provides only a living wage. In other words, instead of obtaining any further reduction in the wage scale the makers are called upon to forego the 12½ per cent. concession they obtained from the workmen early in the year. That they will do this is virtually out of the question under

Present conditions. It is a fact, often asserted by makers and generally appreciated by the trade, that at the present price of plates makers cannot produce them at a profit under the old wage scale, made when plates were selling at anywhere from 50 to 75 per cent. higher.

The Welsh tin plate workmen persistently ignore this fact. They argue that wages have been reduced in order to meet American competition, but that the reduction was unnecessary, as it has given the opportunity to American makers to again manage to lower their prices, by cutting wages, in order to approximate the Welsh cut rates. Had not Welsh prices been lowered, they say, the reduction in American wages would never have taken place. As prices of raw material are going up in the United States, it is presumed that the tin plate manufacturers will have either to cut wages again or put up the price of their plates. In either prospective event the Welsh workmen think they see the favorable moment for an advance in their own wages and in the price of the Welsh product. They contend that wages should govern prices and not prices wages. The calculation was made by the Tin Platers' Council that in the six months ending June the tin plate workmen have lost in wages, through reductions, \$260,000. This sum, they claim, could have been retained by the manufacturers instead of being handed over gratuitously to their American and foreign customers.

At the council meeting a resolution was passed expressing approval of the recent manifesto issued by the union, a copy of which was printed in *The Metal Worker* a few weeks ago. The form of motion which was adopted in regard to the wage scale was as follows:

"That this council determines, as a means to secure a uniform rate of living wages, to instruct all tin plate workers to refuse working after June 30, except at rates of wages generally known as the 1874 list."

This motion was carried unanimously, together with a further resolution that for the month of June subscriptions to the union should be doubled, in order to meet prospective expenses attending any coming stoppage of work. So the situation stands in Wales at the present time. The fact seems to be that the men are haunted by the fear of further wage reductions, and so have adopted heroic measures, whereby they expect to sink or swim. In either case the outlook for the makers is not cheering. They are "between the devil and the deep sea," to use a forcible expression, and the way out of their dilemma is not plain to see.

Tin Plate Tongs.

From P. H. J., Philadelphia.—Does any firm make tongs for taking tin plates from the rolls which will not leave a mark on the plates?

Note.—We do not know of any concern manufacturing such an article, but will be glad if any of our readers who possess this information will kindly inform us for the benefit of our correspondent.

SCRAP.

THE heavy advance in the price of tin plate bars has caused advances to be made in the price of black plates, but the difference is not compatible with the increased cost of steel. For shipment during July, August and September higher prices are obtainable, but for deliveries beyond that time dippers are not willing to make contracts at present figures.

THE proposed scale of wages for operating Morewood tinning sets contains slight advances for catchers and assorters. In making comparisons of wages paid on Morewood sets with automatic machines it has been found that one man working on the Morewood process receives more money than the whole crew on automatic machines. The difference in prices obtainable for finished products is so slight that the first named process is considered by some manufacturers a luxury instead of a source of profit and a reduction in wages deemed absolutely necessary or that method of manufacturing will have to be discontinued. Such are the expressions of opinion made by those who have adopted the process. The quality of the product is undoubtedly fine, but market values do not warrant the heavy expenses for labor.

A SAN FRANCISCO correspondent writes: The tin plate demand is just reaching expectations for the fruit crop season. A sufficient stock is always carried to meet the demand at this time of the year and there is no flurry in the market. An enormous amount of fruit will undoubtedly be canned this year. A great impetus has been given to the foundry business by the revival of mining, not only in California but all over the coast. The foundrymen report some heavy orders for mining machinery and have their hands full.

MANY black plate mills are now able to run full time, as there is a larger supply of tin plate bars than during the past two months. Many of the Indiana mills are now able to operate to their full capacity, and mills in Ohio have secured ample supplies of materials. The various steel mills of the country now have a capacity of about 1000 tons of tin plate bars per day, cut to length ready for use.

THE report that the Bellaire Nail Works of Bellaire, Ohio, have commenced the erection of a tin plate works is incorrect. The company will build a new mill for rolling sheet bars and tin plate bars, and skelp and bridge plate. They are not yet ready to give any details as to size and capacity of the mill.

JACOB MEURER of the firm of Meurer Brothers Company, 575-577 Flushing avenue, Brooklyn, has just returned from a business trip West, in the course of which he attended the meeting of the Tinned Plate Manufacturers' Association, at Pittsburgh, and visited a number of the works in the Indiana gas belt and the Pittsburgh and Wheeling districts. Mr. Meurer reports that all the mills are as busy as they can be, with orders on their books sufficient to keep them in operation well on toward the fall. He speaks in the highest terms of some of the mills which have recently been put up, and also of the quality of the product turned out by them after a very short experience in the manufacture of black and tinned plates. Very little fear is expressed in any quarter as to the future of the American tin plate indus-

try. The only complaint to be heard among the manufacturers was the difficulty they at present experience in obtaining a sufficiency of tin plate bars.

J. J. THOMAS has resigned the management of the mill of the Lalance & Grosjean Mfg. Company, at Harrisburg, Pa., to take the position of superintendent of the extensive plant of the Midland Steel Company, Muncie, Ind.

LAMBERT, STOUGHTON & COOPER, Philadelphia, have found their business in palm oil for tin plate manufacturers, and other oils, increase to such an extent as to require additional accommodation in their manufacturing department. They have just completed the erection of a three-story brick building, 40 x 100 feet, at 848 and 850 Swanston street, and have installed therein a large number of presses and refining tanks and other articles pertaining to the equipment of a first-class refinery. The new building, with their four-story warehouse on Petroleum street, and their other storage facilities, will, it is hoped, enable them to take care of their heavy imports and increase their capacity for business. The firm have on the market four brands of palm oil, which they state are in good demand and increasing in popularity each month. The firm claim to be the largest direct importers of palm oil in the country, and that their refining methods are conducive to the production of oils especially adapted to the requirements of tin plate manufacturers.

W. F. JANEWAY, Columbus, Ohio, manufacturer and jobber of tin plate, sheet iron, solder and tinner's supplies, is distributing a neat desk blotter, on one side of which is an announcement calling attention to the Franklin Reddipped roofing plate, which, it is claimed, is meeting with great success. The statement is made that each box carries 30 pounds of coating, evenly distributed over the surface of the plates, every sheet being resquared and stamped. Another form of blotter distributed by Mr. Janeway carries a list of his other special brands of roofing plates, namely, A. L. Old Style, Harold, Emory, Dennis and Lowery. He claims that he has now obtained a complete line of roofing plates so as to cover all the requirements of the trade, from a cheap grade to the very highest quality.

THE WORKS of the Beaufort Tin Plate Company, Morriston, South Wales, have been rendered idle, the workmen having struck in consequence of a dispute as to the discharge of one of their number.

THE DYFFRYN TIN PLATE WORKS of Daniel Edwards & Co., Morriston, South Wales, have restarted, and those of the Blaia Iron & Tin Plate Company, Limited, will resume in July, having made terms with their workmen.

THE TIN PLATE TRADE will notice the announcement printed in our advertising columns this week and signed by Robert B. Byass & Co., through their New York agents, H. Whittemore & Co., 62 William street, to the effect that spurious terne plate bearing their trade-mark is being manufactured and sold in the United States, and that they notify all parties dealing in such spurious plate that they will be held strictly liable for damages. A facsimile of the trade-mark, which we are advised is registered in this country, is shown in the announcement.

FROM AKRON, OHIO, comes the announcement that O. C. Barber, president of the Diamond Match Company, and Monroe Seiberling of the Diamond

Plate Glass Company, in connection with several other capitalists, have decided to erect a large tin plate plant in that city. It is stated that A. P. Baldwin of the Akron Iron Company will be superintendent of the new concern.

THE TOTTEN & HOGG IRON & STEEL FOUNDRY COMPANY, Pittsburgh, Pa., manufacturers of rolling mill engines, rolling mills and tin mills, have just received a second order from the National Tin Plate Company, Anderson, Ind., for two more 24-inch hot mills and two 24-inch cold mills, with rolls and everything complete. This new equipment will be added to the plant now under construction at Anderson, Ind.

ONE of the most complete and best equipped tin plate plants in this country is that of the Ellwood Tin Plate Company, at Ellwood City, Pa. There is a main building, 200 x 180 feet in size, of corrugated iron, which contains the black plate mills, the annealing and pickling departments. In the black plate department there are four hot mills 24 x 30 inches in size, four cold mills 24 x 32 inches, four heating furnaces, four pair furnaces, four doubling shears and three squaring shears. The pickling department is equipped with a Mesta patent pickling machine, and in the annealing department are five large annealing furnaces. The tinning department is located in an iron building 50 x 100 feet in size, and contains six Thomas & White tinning machines and two Morewood machines. The assorting room is 45 x 40 feet in size. When in full operation the plant has a capacity for turning out from 2500 to 3000 boxes of tin plates per week. The concern make all grades of bright and roofing plates, which have given entire satisfaction wherever used. The entire plant is now in full operation, and the concern have sufficient orders on hand to keep them busily employed for some time to come. The main offices and selling departments are located in Cleveland, Ohio.

ENOCH STAMFORD has been appointed manager of the Lalance & Grosjean Mfg. Company's mill at Harrisburg, Pa., in place of J. J. Thomas.

MONROE SEIBERLING of Kokomo and R. C. Beatty of Elwood, Ind., are said to be looking for a good location for a large tin plate plant, which they purpose building somewhere in the Indiana gas belt.

THE Abbey Tintern Tin Plate Company's works, Tintern, Gloucestershire, which have been running spasmodically since the death of their owner, Mr. Griffiths, a year ago, shut down indefinitely the week before last, and are not likely to be again put in operation.

THE Vernon Tin Plate Works, Briton Ferry, South Wales, an 8-mill plant, which have been idle for some months, restarted at the beginning of this month.

THE whole of the tin plate works at Pentardulais and Briton Ferry, South Wales, are reported to be again in full operation.

A NEW sheet department is being added to the works of Zug & Co., Pittsburgh, Pa. It contains two trains of rolls, and will have a capacity of about 80 tons a week. All sizes of sheets will be rolled, and it is understood that thin plates for tinning purposes will be included in the product.

THE French Government is reported to have placed an order with the Aluminium Company of Neuhausen, Switzerland, for the supply of 45 tons of aluminum for marine purposes.

STEAM AND HOT WATER.

Convention of Master Fitters.

The Master Steam and Hot Water Fitters' Association of the United States completed the proceedings of its seventh annual convention late in the evening of Friday the 14th inst. After transacting considerable business in executive sessions held in the afternoon and early evening, the convention was, about 9 o'clock, declared to be in open session. Election of officers for the ensuing year was immediately proceeded with. The report of the Committee on Nominations was presented and on motion received. The voting was, on motion of W. O. Thompson, made unanimous by the casting of one ballot by the secretary. The following officers were elected:

President, H. D. Crane, Cincinnati.

Vice-President, Arthur C. Walworth, Boston.

Treasurer, Elias D. Smith, New York.

Executive Committee, Wm. P. Thompson, Philadelphia; James Curran, New York; D. M. Quay, Chicago; Chris. Branch, St. Louis, and F. J. Williams, New York.

Sergeant-at-Arms, H. A. R. Dietrich, South Bethlehem.

E. D. Smith asked that a committee be appointed to audit his accounts as Treasurer. J. B. Hughes then moved that the treasurer's report be accepted without audit and the motion was carried unanimously.

The place for holding the next annual convention was then decided upon, St. Louis being the choice of the meeting.

The essays which were to have been read before the convention were, for want of time, ordered to be printed in the official report of the proceedings and thus considered as read.

A committee from the Central Supply Association comprising Hughes, Walker and Gark was then received and informed that certain matters submitted by that association to the convention had been discussed in executive session and referred to the incoming executive session.

After a vote of thanks to the retiring officers the convention adjourned.

THE Wilks Mfg. Company, Chicago, Ill., report a very large trade on the Wilks hot water heaters. The late cold winter gave their heaters, which have been installed in all parts of the country for house heating, a good test, and giving the best satisfaction in every case has started an increased demand for them for this purpose. For house heating they have not hitherto been generally introduced, but have been well known and appreciated for many years for supplying hot water in all quantities. They also furnish an

improved steam generator for steam heating, &c., and will be glad to furnish all information, catalogue, &c.

The American Society of Heating and Ventilating Engineers

A purely unconventional meeting of the American Society of Heating and Ventilating Engineers was held on Friday, June 14, in the parlors of the H. B. Smith Company, at the Continental Hotel, Philadelphia. It was presided over by the president, Stewart A. Jellett, and the following members were present. Wm. Mackay, C. S. Onderdonk, D. M. Quay, J. A. Goodrich, L. H. Hart, H. J. Barron, J. J. Wilson, B. H. Carpenter, T. B. Cryer, Robert Monroe, A. G. Paul, W. H. Hill, W. H. Clark, H. A. Joslin, W. A. Russell, A. C. Edgar.

The secretary gave a résumé of the work that had been done by the different departments since the convention, and members of the different committees gave a synopsis of their plans and asked the assistance of the members who could aid them in their labors. On motion of D. M. Quay, a resolution was adopted to send the greeting of the society and its best wishes to the Association of Steam Fitters in convention.

The members discussed different topics of interest to the society and before disbanding, on motion of W. M. Mackay, a vote of thanks was given to the H. B. Smith Company, for the hospitality extended.

Trade Schools.*

BY CHAS. J. GILLIS.

In the fall of 1894, the New York Trade School, founded by the late Col. Richard Tylden Auchmuty 14 years ago, and situated on First Avenue, Sixty-seventh and Sixty-eighth streets, New York City, informed the local organization of Master Steam and Hot Water Fitters' Association of New York City that they were ready to establish a class of young men in their instruction in the erection of all kinds of steam and hot water heaters and mechanical appliances connected with them. The local organization appointed a committee to assist the trade school authorities in formulating a plan of instruction in the proposed class, consisting of John J. Smith, Enoch Rutzler, J. D. Clark, S. J. Geoghegan, James Curran and Charles J. Gillis. Ample room having been furnished, on the recommendation of the committee Mr. Thomas E. McNeill, a mechanical engineer with large experience in erecting steam heaters, was placed in charge of the class, assisted by Charles A. Coolidge, a practical steam fitter. The class started with 13 members from different parts of the country. Mr. McNeill delivered two addresses each week to the class on the scientific aspects of the business, on steam, its power and vast influence upon modern civiliza-

tion; on the construction of the various types of steam and hot water heaters, explained the operation and construction of steam pumps, of gauges, pump governors, injectors and return steam traps and the articles used in the construction of heaters. Mr. Coolidge showed the class all about the different sizes and kinds of wrought iron pipe, the use of screw plates, taps and dies, cutters, cocks and valves. He made the members of the class work with their own hands, cutting in the steam traps and all the labor necessary for a complete apparatus, and after some weeks of daily instruction in these matters he furnished each man a drawing and made each pupil cut all the pipes to measure and piece to put them up, connecting them with radiators, boilers and tanks. This was repeatedly done during the term of three months' instruction until every one of the graduates had personally put up an apparatus with his own hands, for the instructors did not themselves do any of the work, only directed how it was to be done. The graduates of the school were men instructed in the manner set forth, must, of necessity, know more about the business when they graduate in three months than the helper, who by the rules of their unions, cannot become a steam fitter until he has served five years. The graduates of the school ought, after serving as helpers, to be admitted to the steam fitters' union.

The graduating class, 11 members, two from New York, four from New Jersey, two from Massachusetts, one each from Wisconsin, New York State and Illinois, received their diplomas and departed to their near and distant homes, and may, if the rules of the unions permit, at once commence work as helpers at good wages, and at no distant day become members of the National Association of Master Steam and Hot Water Fitters.

The steam heating business is but 50 or 60 years old, one of the founders, the venerable James J. Walworth of Boston, upward of 90 years old, being still with us, while many others more than 70 years old will soon be joining the vast majority beyond the skies, far away from the cantankerous architect and the lowest bidder on contracts; and presumably, if they have done good and honest work, will be at rest in the good and honest work of the divine music of St. Cecilia and her choir of attendant angels. And who is to take the places of these departed ones? Surely the educated mechanic. Surely the graduates of the trade schools.

After the experience of the first season of the steam heating branch of the New York Trade School it may be considered a pronounced success, far reaching in its consequences, calculated to make better and more successful mechanics, and to place the business in a more dignified position. Let us always remember with profound reverence the founder of this school, Col. Auchmuty, who, in the latter part of his life constantly suffered from a severe wound received in the war of the rebellion, patiently listened to the application for the formation of a class for instruction in steam heating and gave his consent.

Battling, at the conception of this enterprise, with difficulties which would have rapidly discouraged many less heroic spirits, he persevered with a fixity of purpose begotten of unshaken confidence in the righteousness of his endeavor and its practical value to the community. Always avoiding notoriety, and only accepting publicity because of its educational influence upon other communities, he pursued his course with a single-heartedness as admirable as it was efficacious. Steadily developing the scope of the institution, and perfecting its methods of operation, he had just completed his studies and finished the preparation of his text-books when death intervened.

Let us also give due credit to the noble and successful efforts of the present managers of the trade school, R. Fulton Cutting, Pierrepont Morgan and their asso-

* Presented at the Seventh Annual Convention of the Master Steam and Hot Water Fitters' Association of the United States, held at Philadelphia, June 13-15.

ciates, who continue the good work of the founder.

We read in the newspapers that a lady in San Francisco has left \$3,000,000 to establish a trade school in that city. Trade and technical schools are already in full operation with marked success in Philadelphia, Brooklyn, New York, Boston, Ithaca, and many other places.

I hope the members of this association will bring their influence to bear upon such institutions and get them all to have classes of instruction in the erection of steam and hot water heaters.

Double Novelty Circulator.

The accompanying illustration shows a double boiler put on the market by the Model Heating Company, Philadelphia, Pa. In referring to the construction of this heater the manufacturers allude to the peculiar internal construction which presents the heat-

The House Heating Boiler Question: How to Regulate.*

BY JOSEPH W. MILLS.

During the years I have been engaged in the heating business it has been my fortune to be closely connected with the manufacturers of the boilers which I, as a contractor, have handled. I have also been, during a portion of that time, an officer and manager of the Western business of a prominent manufacturing company. In considering this question I therefore view it from the standpoint of the manufacturer as well as from that of the contractor.

From the knowledge I have I am justified in saying that it is the desire of some, and, I believe, of most boiler manufacturers, that the business of manufacturing should be confined strictly within the limits indicated by the term; that is, that they should make and sell their wares to those who use such in their contracts. In connection with this is the other natural desire

furnaceman to make steam fitting a branch of his business.

It can hardly be regarded as a serious breach of propriety for a boiler manufacturer or any other business man who may possess the confidence of such a journeyman, or plumber, or furnaceman, to advise him, if his judgment so dictates, in favor of starting in business or of adding a heating branch to his already established business.

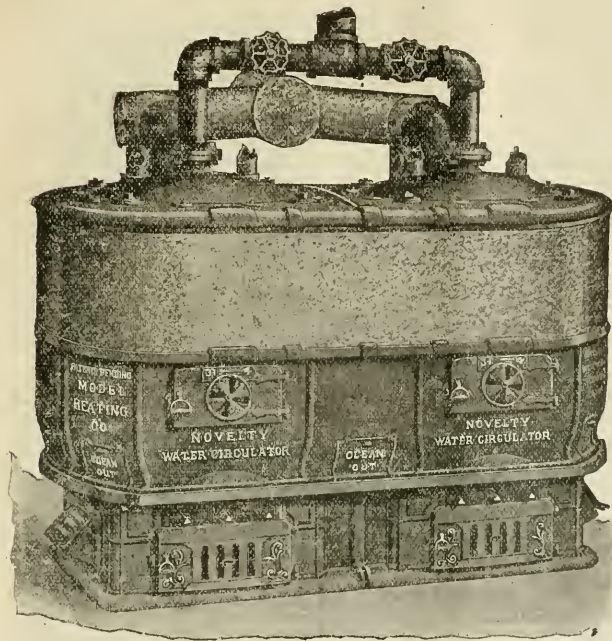
Unquestionably it is also proper for a manufacturer to extend credit to a journeyman so starting, or to one already in business on a comparatively small scale. A man's reputation and acquaintance is justly considered part of his capital. We all of us know cases where a man with little, if any, financial responsibility is able to get credit beyond what the state of his finances would strictly warrant, because some manufacturer or some jobber has known him for many years and known him to be so honest, so industrious, so expert and so intelligent that he is, in all human probability, certain to make a success of his enterprise.

The serious question is where to draw the line. We sometimes see in a town where business is good and all the established steam fitters have such affiliations with certain boilers that a new manufacturer cannot get one of them to take up his line, that he will make for himself an agency in one of three ways. He will induce a plumber or hardware man to take up steam fitting, with the lure of big profits, promising him the necessary expert assistance; he will encourage or request a journeyman fitter—possibly one in his own employ—to start a shop in that town, giving him the necessary financial backing; or he will take up some fourth-rate man already located there—a man without ability or credit—and sell him goods on a scale in no way commensurate with what the business merits of the case justify.

It is often difficult to determine whether the manufacturer who pursues one of these courses is acting on his best judgment or whether he is deliberately using the men or firms in question as blinds behind which he may himself carry on the contracting business. In many cases his action is based on deliberate and full knowledge, and is an unquestionable violation of our rights. Often, however, the same course is pursued by manufacturers new to the business, who have no comprehension of the certain outcome of such a policy or of the effect it will produce in the minds of the best of us in the trade, whose good will they are, or should be, anxious to secure and retain.

Whether the course complained of is pursued through ignorance or with full knowledge, it is, I presume, equally obnoxious to us. If there is any distinction, it might perhaps be said that the ignorant manufacturer does the more harm, because he will go further in the direction complained of.

As an old manufacturer, I am bound to say that I think the manufacturers have not been without their occasional grievances. I will leave out of sight the fact that some of us are not only contractors, but also manufacturers, and are therefore hardly in position to criticize the manufacturers who would also be, occasionally at least, contractors. But I think it cannot be truthfully denied that, while we who are strictly contractors have been asking the manufacturers to refrain from contracting and to confine their dealings as closely as possible to those who stand the highest and are the longest established in our trade, we ourselves have not always reciprocated. When we have had occasion to use a patent boiler, we have sometimes been quick to furnish a customer with a boiler that might risk for, in order to save our own time and breath. We have, perhaps, where the selection of the boiler was left to our discretion, in some cases, used the one which would cost us the least money and thus enable us the more easily and surely to secure the contract, or, having the contract, to make a larger profit. This we have never done with deliberate purpose to support the manufacturers who offend us as against those who seek to aid us, but in thoughtlessness and possibly sometimes a little of indifference. I think we must in all justice admit that we, who are so strenuously insisting upon the manufacturers acting in accordance with our interests, should, when we have occasion to erect apparatus within the range of sizes of the patent boilers, give to our friends such substantial encouragement as shall show them that we also are their friends. Let us pay them, perhaps, a few more dol-



Double Novelty Circulator.

ing surface in such a manner that the products of combustion are compelled to impinge on all parts before reaching the smoke outlet. The heating surface of each section is composed of ascending and descending flues, which are described as practically self-cleaning, being pointed at the top and bottom. When built the boiler flues are staggered, bringing a large amount of heating surface in direct contact with the fire. Asbestos gaskets are used for joints between the sections which are fastened with steel bolts through the water ways. The manufacturers refer to the special machinery employed in finishing the sections, which, they say, insures absolutely tight joints. The boilers being sectional are easily handled, and any part can be taken through an ordinary door. Double boilers are particularly recommended for schools, churches and office buildings where a large grate area is required, while in mild weather a single boiler can be used, the two being so arranged that each can be fired independently of the other in case of accident or need of repairs.

that their field shall not be encroached upon by those whom in their policy they protect.

There is no doubt in the minds of any of us that manufacturers should mend their ways in many respects. They should never, under any circumstances, sell the boilers, radiators, or similar supplies which they manufacture to any not regularly in the trade or on the exempt list. They should refrain from contracting either directly or through the medium of small contracting houses supported, if not actually established, by them, fitters who rely entirely upon them for credit and who give them all their profits beyond ordinary fair steam fitters' wages.

This brings up a problem which is a most difficult one. It relates to the building up of new steam fitting concerns. It is unquestionably within the right of any first-class, ambitious journeyman steam fitter, who shall have accumulated a little capital and established a reputation for good work, or who can command the necessary capital by borrowing or by associating with himself a business partner, to engage in business as a heating contractor. No doubt it is also within the right of a plumber or

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lars and use our influence to get the extra price from our customers. If a specified boiler is made by one of the manufacturers who have antagonized our interests, let us spend a little time to get the specification changed. I believe not only that this is a matter of common fairness, but that it is good business policy for us to keep all the friends we have and to make new ones, and at the same time to discourage our enemies and their methods as much as possible.

Having analyzed the evil, we must consider how to remedy it. That is something that I will not attempt to go into. It is worthy of the best deliberations of the wisest heads in this body. We can simply start out with the proposition that we do not want manufacturers, in their efforts to make a market for their goods, to build up for us ignorant, incompetent and irresponsible competition. Fair competition we gladly welcome. We are always pleased to see a good business man, a man who is seeking to build up a successful business, a man of character and of mechanical ability, join the ranks of the Master Steam and Hot Water Fitters. We can compete with him in a way that will do him and ourselves good, but let us see if we cannot stop the manufacturer from bringing to bear against us his overpowering facilities, by contracting in the name of a stool-pigeon, and also prevent him from multiplying many times the number of men and firms engaged in a business already sufficiently full.

Convention Aftermath.

G. W. LEWIS visited the convention, and his cards bore the inscription of the Boynton Furnace Company, New York, manufacturers of steam and hot water boilers.

SAM O. DUGGER came on from Chicago to greet the Western delegates and patrons of the Standard Radiator Company, Buffalo, N. Y.

The steam specialties of G. M. Davis & Co., Chicago, were well represented by W. E. Davis.

H. H. GIBBS came from Buffalo with the new 6-inch wide radiator just being shown by the Niagara Radiator Company, Buffalo. This radiator is looked upon as one of the greatest "Falls" that the boys have ever wrestled with.

The bronze man did not mean the Penn statue on the City Hall, but Bernhard Meiner's representative, Wm. F. Aarons, New York, who was a very genial gentleman, presenting a card printed in a beautiful blue bronze just the thing for radiators.

DON J. HERSEY, steam and hot water heating engineer, representing F. Coggeshall, Providence, R. I., showed a new pipe wrench that was voted capable of doing a good turn.

ALEXANDER DON, 61 Gold street, New York, explained the merits of the Bard expanding nipple holder to the pipe fitters. This device is made by Geo. F. Bard, Norwich, Conn., and enables close nipples to be readily cut and threaded either by hand or machine. Mr. Don is the manager of the New York office of the W. H. Page Boiler Company, Norwich, Conn., and what he volunteers on the steam and hot water heating question is *All Right*.

JOHN A. SCOLLAY, 74 Myrtle avenue, Brooklyn, arrived at the convention on the last day, looking hale and hearty, and was well acquainted with the young and also with the older members of the steam and hot water heating trade. He brought with him an 1851 catalogue of steam fitters' supplies put out by the elder Walworth and his partners from 79 John street. Mr. Scollay sent this book by A. C. Walworth to Boston, so that the senior Mr. Walworth might again look over one of his early catalogues.

The Niagara Radiator Company of Buffalo, Chicago and New York exhibited at the recent convention in Philadelphia samples of the new radiator which is called the Niagara Jr. It is a radiator of exceptional beauty and superior casting. It measures 4 feet of heating surface to the section, standing 40 inches in height and 6 inches width, connected with push nipples top and bottom. A deserved success for this addition to their varieties was predicted by some who saw it.

HEATING NOTES.

W. E. MORGAN & Co., Oakland, Cal., explained their plan of heating some new school buildings to the committee by introducing a model school, with miniature flues, chimneys, &c., which, when set before the committee formed a unique object lesson, the passage of the air through the building being illustrated by means of tobacco smoke, blown through prepared openings in the tiny school house.

WARREN WEBSTER & Co., INCORPORATED, Camden, N. J., have just issued a 56-page catalogue descriptive of the Williams "Vacuum" system of steam heating. With this system the firm guarantee that exhaust steam may be utilized without back pressure on the engine, so that the cost of power and heat is no greater than the cost of power alone; and when applied to plants in which live steam only is available for heating at high pressure it is claimed to be almost equally valuable. In several instances, it is stated, an initial boiler pressure of 24 pounds has been sufficient to insure better circulation and more efficient heating than previously obtained from the same piping under 80 pounds pressure. The saving in fuel, power and boiler capacity is explained, and plans of the system are shown in connection with the text. The greater part of the book is taken up with reduced *fac-similes* of testimonials received, copies of injunctions restraining infringements, and references to concerns already using the plants. The catalogue appears in stiff paper covers of orange color, and is gotten up in the firm's usual good style.

H. R. IVES & Co., Montreal, Canada, issue a four-page circular in the interests of the Buffalo hot water boiler of their manufacture. On the front page is an illustration of the medal awarded them at the Columbian Exposition; a general view of the boiler is shown and some of its special features alluded to. The inner pages present plans of the heating apparatus of the Government House at Ottawa, Ontario, in which Buffalo boilers are used. The last page gives a number of testimonial letters.

The New York Central Iron Works, Geneva, N. Y., are issuing to the trade a circular of the new Drunning Club boiler for steam and hot water heating. The circular is illustrated with a cut in two colors showing the construction of the boiler, the arrangement of the grate and the expanse of heating surface exposed to the fire. The circular also gives the full dimensions of the five different sizes of the boiler.

THE ASHTON Valve Company, Boston, Mass., are issuing a red covered catalogue, showing illustrations of the different kinds of Ashton's pop safety valves, their water relief valves, steam pressure gauges, ammonia gauges, hydraulic gauges, marine clocks, engine registers, and square counters. Their hydraulic gauges are designed to record pressure up to 10,000 pounds to the square inch.

E. M. BOSLEY, 412 North Eleventh street, St. Louis, Mo., has recently taken out a patent for the incandescent superheating steam boiler, which is said to burn soft coal without smoke and to make steam with any kind of fuel. It is of the horizontal construction, and made of boiler plate.

W. H. WILKINSON AND JAMES W. PICKARD, under the firm name of Wilkinson & Pickard, will engage in furnace, steam and hot water heating, and heating and ventilating sheet iron work, at 210 Water street, New York.

THOMAS W. HARTLEY of Couch & Hartley, Hartford, Conn., was a visitor among the heating trade of New York this week.

THE Nason Mfg. Company, 71 Beekman street, New York, make a specialty of pipe bending along with their other steam supplies. One afternoon this week a coil of 24-inch heavy wrought iron pipe, measuring 30 inches in diameter and 6 feet in height, attracted some attention in front of their establishment.

EDWIN R. STOUGHTON AND F. W. JAQUI, look after the steam and hot water business of the Thatcher Furnace Company, 240 Water street, New York, and the Champion boilers are meeting with increasing sales.

OLIVER SCHLEMMER, Cincinnati, Ohio, visited the heating trade in New York after the conventions, showing his new distributing fitting, which is designed to save several joints in pipe fitting and to supply radiators on the first floor with hot water from the same flow riser that heats radiators on upper floors. The fitting is a reducing T, and is provided with a partition which distributes the rising current of hot water.

A Parliamentary paper just issued gives some interesting information in regard to the decrease in value of lands in Great Britain within the past 25 years. It shows that the total ratable value of the property assessed in 1870 was \$524,350,000, while in 1894 it was \$805,405,000. The ratable value of land, however, which increased considerably in the first ten years after 1870, is shown to have since declined materially. In 1870 the ratable value of land was \$199,175,000, or more than one third of the whole ratable value; whereas in 1894 it was only \$168,270,000, or barely one-fifth of the whole.

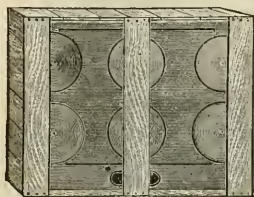
A canal is to be constructed from Marseilles to the Rhone, a distance of about 35 miles. The most important feature of the work will be a tunnel 4½ miles long. The depth of the water is to be 6 feet 6 inches between the Rhone and Port de Bouc and 10 feet from thence to Marseilles. The width will be sufficient for two paddle vessels, 46 feet wide, to pass each other, boats of this character being largely used on the Rhone. The cost is estimated at \$16,000,000, one half of which will be borne by the State and the remainder by the Marseilles Chamber of Commerce and the city.

The Canadian "S.O." Canal was formally opened at Sault Ste. Marie, Ontario, on June 13. The new canal runs through St. Mary's Island, on the north side of the rapids on the St. Mary's River, and provides Canada with independent communication with Lakes Huron and Superior. The length of the canal and its approaches is 18,100 feet. The cost of building it has been about \$4,000,000.

THE RETAIL STORE.

The "Knock Down" Steel Range.

A range possessing many interesting features of construction is being offered the trade under the name of "Knock Down" by the K. D. Steel Range Company of 119 Woodland avenue, Cleveland, Ohio. This stove is made of double annealed patent leveled steel, the front, back, ends, top and bottom



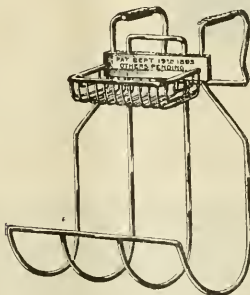
The "Knock Down" Range Crated for Shipping.

plates being separate parts and neither riveted nor bolted, but held together by a mechanism of the company's invention. The fire box has brick linings resting on a perforated grate, thus allowing ample ventilation between the linings and the oven plates. The grate used is of the company's invention, being a hollow cylinder with tooth-like projections designed to agitate the ashes and clinkers. The perforations between the tooth-like projections serve a triple purpose. They allow the ashes to drop through freely, give ample ventilation and draft and tend to prevent warping. The toothed side bars which meet the projecting teeth of the hollow cylinder can be revolved in either direction by means of a crank handle, for the purpose of dislodging ashes or clinkers. The construction of the grate is such that it is always in position without regard to the way it is turned or left. The oven plates are separate from each other, and so put together as to prevent all warping and buckling, which are always sources of annoyance. The end plates are lined with heavy asbestos paper, which is designed to prevent radiation of heat into the rooms, this arrangement also resulting in economy of fuel. The elevated oven has a revolving door and nickel plated drop shelves, which are useful as well as ornamental. The company manufacture three styles and four sizes of family ranges, one style with a perforated cast base, which is in sections, and one style with two front legs of steel, while the third style is without cast base. The "Knock Down" steel range is so constructed that the various parts can be easily replaced without trouble. The company make a point of their facilities for shipping, referring to them as being very advantageous to the trade, for the reason that the range when crated occupies less than one-quarter the space occupied by similar stoves as ordinarily shipped. An idea of the appearance of the range when crated for shipping may

be gained from an inspection of the accompanying illustration. The compact form in which the range can be shipped results, the makers claim, in a saving of storage, freight, breakage, loss and time in handling. Each part is labeled and full directions for setting up the stove are given on a circular which accompanies the shipment. The company state that their ranges are sold under an absolute guarantee that the material and workmanship are the best and that the stove will operate with entire satisfaction in all cases under proper conditions.

Combination Soap and Sponge Holder.

Bernard & Frank, 174 Fulton street, New York, have just placed on the market the patent combination soap



Combination Soap and Sponge Holder.

and sponge holder illustrated herewith. The holder is made of brass wire, nickel plated, with a ratchet arrangement on the top which makes it adjustable to any width of bathtub rail. The device is recommended as doing away with the inconvenience caused by placing soap, brush or sponge on the bath ledge or having them floating in the water. All the bathing accessories are by this means kept within easy reach, the holder being hung inside the bathtub. The device is also made with a porcelain soap cup in place of the wire arrangement shown in the cut. Another form of holder is made without the long sponge rack, giving only a place for the soap and brush.

The Lamp Trade.

Buyers of Lamps and Lamp Goods can scarcely fail to be impressed with the remarkable changes this department of trade has undergone within the last few years. Concerns who not long ago made a few primitive patterns, mostly staple, have energetically increased their output until one is almost bewildered by the profusion of styles, patterns and kinds of Lamps seen in their elegantly appointed showrooms, from the unassuming Spun Brass Table Lamp to Parlor and Banquet Lamps costing hundreds of dollars, with mountings of rare china, porcelain, cut glass or metal.

With the elaboration and incorporation of valuable characteristics has come a great decrease in price. Ignoring entirely the more expensive grades, better Lamps every way throughout are to-day sold at \$6 each than were purchased several years ago at \$20, while in still more modest kinds, but handsome in appearance, \$42 a dozen will secure much better Lamps now than formerly brought \$100 for the same quantity. The decreased cost of raw materials, including copper, brass, spelter and onyx, and the lower level of wages accounts for much of this. Then competition and a wider market have stimulated inventive genius, and developed improved machinery and better methods. The great demand for onyx, for instance, has caused quarrymen to seek it, and pieces that formerly averaged \$3 each are now sold at a quarter of that sum; where a manufacturer would buy in lots of, say, 20 pieces, he can now handle quantities 15 to 20 times that amount at a time and at a great reduction in price.

Galleries abroad have been visited for models in bronzes, pottery, &c., from which to reproduce Lamp figures, shafts, columns, heads, &c. Much of this holds good with regard to shades so far as more handsome effects with a corresponding decrease in cost are concerned.

Barker's Cloth Holder.

The accompanying illustration shows a device upon which application has been made for a patent, and which is being introduced to the trade by Charles H. Barker, Danville, Ill. It is a towel or cloth holder for cleaning ceilings and walls. As shown in the cut, which illustrates the holder and also its appli-



Barker's Cloth Holder.

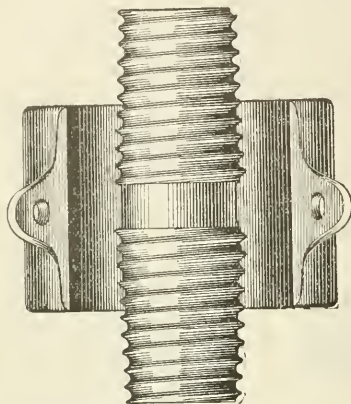
cation to a broom, the device consists of a wire frame connected at the ends by a strong rubber band. The frame is slipped over the broom as shown, and the rubber band passes around the broom proper and holds the cloth or towel in place. These holders will be put up in boxes of three and six dozen and sold at a very small figure.

ROBERT J. MASHACH, 80-82 Vesey street, New York City, has issued a 26-page pamphlet relating to the specialties which he manufactures. These include, among other articles, peanut and chestnut roasters and warmers, hotel tinware, &c. These goods are made in various styles and sizes and adapted to meet varying requirements.

The Ideal Hose Mender.

We show in the accompanying illustrations the Ideal hose mender, a patent for which has been applied for by L. H. Snyder, and which is put on the market by the Beaton & Corbin Mfg. Company, Southington, Conn. The two thimbles which fit in the ends of the pipe are held together, as shown in the illustration, by a clamp hinged at the back and closed by means of a screw passing through two flanges at the opposite side. The construction of the device is simple and it is claimed to be very efficient. The only thing neces-

sary to its application is a screw driver, and it is stated that it can be put in place in a minute. Fig. 1 shows the clamp open, while Fig. 2 shows it closed in use upon a hose.



The Ideal Hose Mender.—Fig. 1.—Clamp of Hose Mender Open.

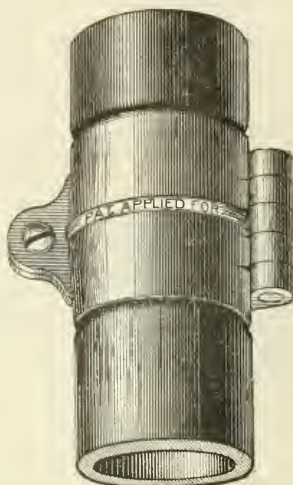


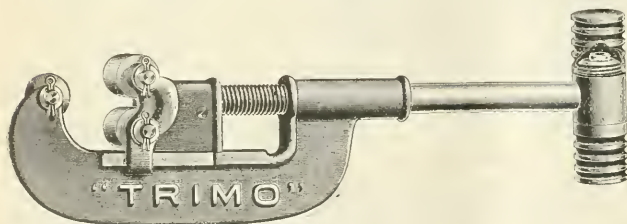
Fig. 2.—Mender Attached to Hose Ready for Use.

Trimo Pipe Cutter.

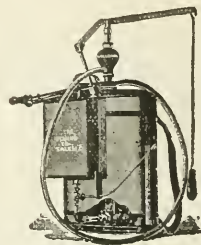
Trimont Mfg. Company, Roxbury, Mass., are introducing the pipe cutter shown in the accompanying illustration. The frame of the cutter is drop forged from bar steel; the cutting wheels are drop forged from the best of tool steel, and the burr removing rolls are case hardened. It is explained that the construction of the cutter is such that when used as a single wheel cutter, as shown in the cut, it does not crawl

prevent chipping the cutting wheels by the twisting of the frame. The bearing for the handle in the frame is long, so that when the cutter is opened to its full extent the thread of the screw will not come out of the frame, the screw being surrounded by the socket of the frame to provide strength where it is required. The company remark that in practice they have found that the screws upon which cutter wheels revolve work loose, and to avoid this they have substituted straight pins, held in place by cotter. These are designed to make it more convenient when changing from a single wheel with rolls to a three-wheel cutter, and also to add strength, as the pins are of increased size. The manufacturers state that the tool is

one in the water section tube prevent any mixing of the liquids except while pumping. The different proportions of the liquids are obtained by a lever which operates a stop cock at the kerosene inlet. An indicator is placed on the tank to prevent mistakes in making the desired mixture. The nozzle used with the sprayer is either the Deming Vermorel or the Bordeaux. The latter, it is remarked, is adjustable to either fine, coarse or double spray, solid stream, degorgement and shut off. The point is made



Trimo Pipe Cutter.



Kerosene and Water Sprayer.

either to the right or to the left, but cuts a square end, also saving materially the breakage of the cutting wheel. The point is made that no burr is left on the pipe, but that it is smooth and ready for the threading die without the use of a file. Each cutter is accompanied by two extra cutting wheels, a receptacle for which is provided in the handle. The cutter is convertible from a single wheel with rolls into a three-wheel

made throughout in a workman like manner.

THE FIRM of Tompkins & Murphy, Norwalk, Conn., have been dissolved, and C. O. Murphy will continue the business of stoves, tin and hardware, wooden and willow ware, tin roofing, plumbing and gas fitting, at 26 Sixth street, the old location.

that kerosene as an insecticide has heretofore been made into an emulsion by the addition of soap suds or of scum milk, and that the making of kerosene emulsion requires care and precision, often causing trouble and loss of time. The device described is designed to obviate the necessity of making kerosene emulsion, and is accompanied by explicit directions for operating the sprayer and destroying insects on fruit trees, plants, domestic animals, &c.

Buzzacott's Camp Cooking Outfit.

A very ingenious camp cooking outfit, invented by a soldier in the United States army, is herewith illustrated. It includes everything needed for cooking, from the stove to the utensil required

long. One adjustable solid handle, so arranged as to fit any utensil for handling in any way when in use. Total, 16 separate utensils, the whole constructed without soldering of parts, permitting of even being heated red hot without fear of falling off of parts. Fig. 2 shows the outfit packed for car-

New Bristol Wick Lift.

Bristol Brass & Clock Company, 32 Warren street, New York, have just brought out the new Bristol wicking device shown in the accompanying engraving. This improvement will be incorporated in their new line of fine

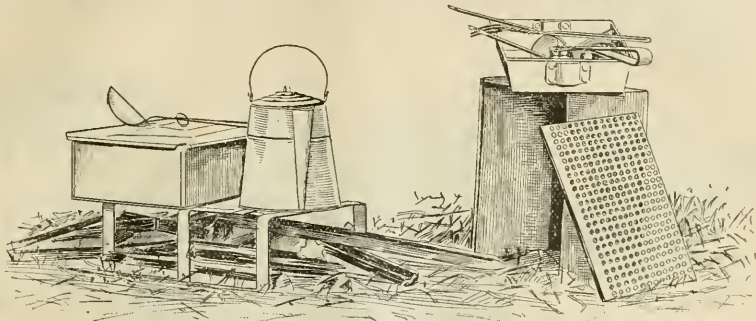


Fig. 1.—Buzzacott's Camp Cooking Outfit.

for preparing the daintiest dish. An excellent idea of the several parts is shown in Fig. 1, in which the skeleton stove is seen in position for operation, while the various utensils are scattered about. The contents of the outfit are as follows: One skeleton stove; one

rying. It then makes a package 11 x 14 x 7 inches, about the size of an ordinary grip, and weighs but 15 pounds. A handle enables it to be easily carried. Small as it appears to be, it will do the cooking for four to six persons. Room can further be found if desired for packing in the above named space six plates, six cups, six knives, six forks and six spoons. Hibbard, Spencer, Bartlett & Co., Chicago, are sole United States agents.

The Quincy Corn Popper.

The Quincy Hardware Mfg. Company, Quincy, Ill., are offering the corn popper here shown. The handle of the popper is of tinned wire neatly twisted and so arranged as not to come loose from the basket. The handle wires project through the basket far enough to rest on the jam of a stove when the lid is taken off, as shown in the cut. It is explained that by revolving the crank the unpopped corn remains at the lower edge of the popper nearest the fire, thereby utilizing all the good grains. The lid of the popper slides on to prevent it from working loose. In operation the corn is shaken by turning the crank, by which action the makers claim that the corn is more

lamps prepared for this season's trade, a part of which are now to be seen at their warerooms in this city. By means of the mechanism used, which is shown in detail, the wick is raised in a positive manner by turning the thumb screw, causing the cage or frame to travel up or down the spiral at will, the thumb piece always remains in the same posi-

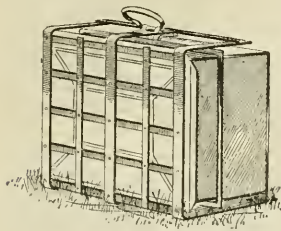
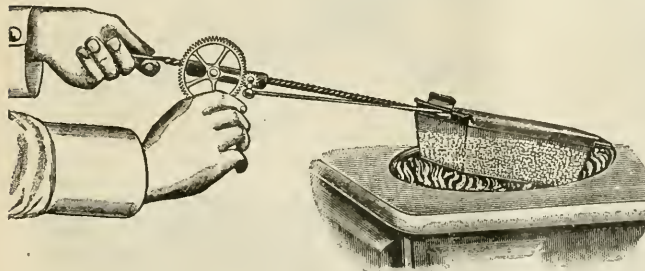


Fig. 2.—Cooking Outfit Packed.

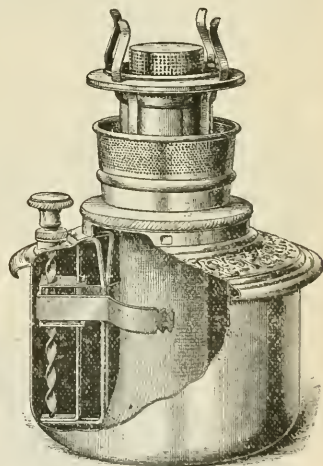
medium boiler, 5 quarts; one large boiler, 8 quarts. These combined form an excellent oven 11 x 14 x 9 inches; capacity, 12 pound wild turkey. One miner's solid lip coffee pot, 3 quarts; one combination frying, roasting and baking pan, 12 x 8 x 2½ inches; one frying pan and boiler cover; one broiler and pan



The Quincy Corn Popper.

rest, 12 x 8 inches; one ladle dipper; one ladle strainer; one large cook's fork; one large cook's spoon; one turn-over; one salt, one pepper and one flour dredge. Handles of tools 12 inches

easily agitated and that it will not burn. The poppers are made in 1 and 2 quart sizes, and are packed either knocked down or put together complete.



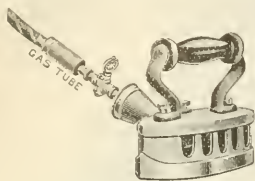
Sectional View of New Bristol Wicking Device.

tion, not interfering with a 4-inch ring for holding the shade by rising above the top of the fount. In rewicking the frame is raised to the top, when the V-shaped rods cause the arms to spread automatically and free themselves from the wick. A new wick of any ordinary length can then be slipped on.

SIDNEY SHEPARD & Co., proprietors of the Buffalo Stamping Works, Buffalo, N. Y., favor us with circulars calling attention to a clearing sale of broken assortments, overstocks, &c. We also have a circular calling attention to Manny's patent lemon juice extractors, dairy milk strainer, nestable strainer pails, sanitary garbage can, ice cream freezers, elbows, registers, &c.

Self Heating Gas Iron.

The illustration presented herewith shows a self heating gas iron manufactured by Collier & Rice, rear 166 Lincoln street, Worcester, Mass., and which, it is claimed, has many points of particular merit. It is especially noted that the iron does not make any smell and the flame does not light back. The air and gas are mixed in correct proportions, insuring, it is claimed, perfect combustion and, consequently, economy. It will heat ready for use in



Self Heating Gas Iron.

ten minutes, and when once hot can be kept so at a maximum cost of three cents per day of ten hours. The temperature can be regulated by the stop cock controlling the gas. The iron, which is provided with a wooden enameled handle that is always cool, weighs seven pounds complete and is finished in either nickel or brass plate. It is easily cleaned and is simple in construction, so it is not liable to get out of order. It is intended for families, laundries, apartment houses, dress-makers, &c., and it is also made in larger sizes of any weight suitable for tailors' use by hand or machine.

Spirit Stove and Curling Iron Heater.

The accompanying cuts represent a German process spirit stove and a curling iron heater, put on the market by Silver & Co., 304-310 Hewes street, Brooklyn, and 20 Warren street, New York. The spirit stove, Fig. 1, has a double flame to increase the heating



Fig. 1—German Process Spirit Stove.

power. Two wicks accompany each lamp, the smaller one fitting entirely inside the tube. This, it is explained, does not burn, but from it a gas is generated which is ignited as it escapes through small openings at the top of the tube. The larger wick fits around the outside of the tube and burns as shown in the illustration. Each stove is provided with a cap for extinguishing the flame and for preventing evaporation of the alcohol. The curling iron heater, Fig. 2, is made with a wrought

iron base, in a dead black finish, for travelers or for home use. Alcohol is used in the handled lamp, for heating the irons.

New Triumph Meat Cutter.

The Peck, Stow & Wilcox Company, 27 Chambers street, New York, have

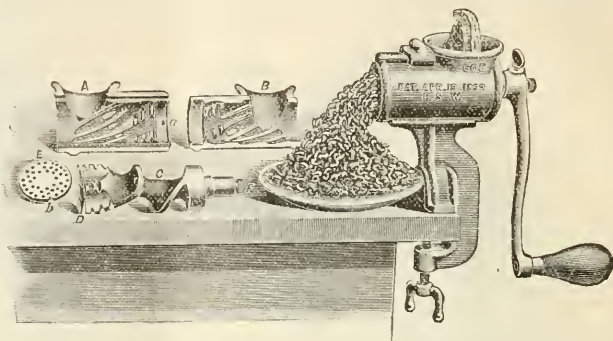


Fig. 1.—New Triumph Meat Cutter and Working Parts.

brought out the New Triumph meat cutter, as shown in the accompanying engravings. In the end of the cutting screw C is a square recess to receive the stud of the four blade knife D. The knife is kept in close contact with the reversible plate E by the adjusting screw F. The plate is held in position



Fig. 2.—Stuffing Attachment.

by means of the stud *a* in the shell entering the notch *b* in the plate.

Emphasis is laid on the capacity of the cutter, and ease and rapidity with which the five working parts are

is said, absolutely rust proof. They have lately added to their assortment a line of bailed galvanized garbage cans, which are finding much favor with the trade. These cans are made in three sizes, so arranged as to nest closely, and they are offered at prices that will allow dealers a handsome profit.

THE STOVENE MFG. COMPANY of Portsmouth, N. H., are doing a rushing business in their specialty, and it is stated that last week they shipped 150 gross of stovene.

THE BEARDSLEY MFG. COMPANY, Cleveland, Ohio, issue a tasteful pamphlet of their specialties in sheet metal. The illustrated catalogue, which is issued under date of May 1, is bound in paper, with the front cover of exceedingly neat design. The first goods

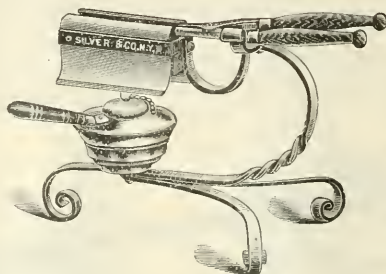


Fig. 2—Curling Iron Heater.

cleaned after use. There are two sizes, No. 605, cutting 14 pounds per minute, and No. 610, which cuts 3 pounds per minute. Both of these are made to clamp. No. 612 is the same size as 610, with feet to screw on table or bench permanently. The parts are all tinned. A stuffing attachment, as shown in Fig. 2, can be sent, when so ordered, at a small additional charge. This is used by removing the knife and plate and inserting the ring of the tube in the place designed for the plate.

shown are the improved double seaming machines for large and for small work, the former seaming cans 4 to 12 inches in diameter and 4 to 20 inches high, while the latter is for smaller work, such as color cans, &c., and will seam cans 2 to 4 inches in diameter and 2 to 6 inches high. Following these machines are illustrations, with price-list, of a large variety of cans, paint, color, dry color, oil, varnish, leather dressing cans, grease boxes, ink cans, pails, sput cans, wood jacketed oil cans and

many others. Nozzles of various sorts follow, and then come several pages given up to oil cans, with and without pumps. Torches, measures, stove showels, steam roasters and other goods complete the catalogue. It should be mentioned that each page of the pamphlet is decorated with a scroll design bearing the name of the company and printed in brown ink.

THE DEATH IS ANNOUNCED of Alonzo F. Harvey of Gloucester, Mass., at the age of 68 years. Mr. Harvey has been for the past 30 years a prominent member of the New England stove and tinware trade.

THE MACKINAW REFRIGERATOR COMPANY, Grand Haven, Mich., have brought out a number of handsome new Refrigerators, quite unique in their way, designed especially for hotels, clubs, restaurants, florists and kindred uses, supplementing their extensive line of Ice Boxes and Refrigerators for ordinary purposes. Those intended for such places as restaurants and clubs are large in size, with beveled plate glass fronts and sides, permitting a view of the daintily arranged contents, while the upper portion surrounding the ice chamber is paneled with beveled mirrors. Another type takes the form of an upright showcase, 24 inches square and about 4 feet high. This is similarly arranged to show the contents below on the several trays, while the ice chamber is embellished with beveled mirrors. Still another group, just added, resemble showcases to be placed on table or counter for florists, in which to preserve and exhibit cut flowers. These are made in single and double styles. In the double case the ice chamber in the center has a mirror front, the backs beveled mirrors with plate glass tops, fronts and ends. The single case is similar—ice chamber at the left. We were also shown a number of new Refrigerators for house use of quite an expensive character. One is lined throughout with heavy white porcelain enameled steel, another being entirely lined with glass. They are all of polished hardwood, cabinet finish, and can be made in antique oak or ash. B. B. Neal, 106 Chambers street, is the New York representative.

HENRY C. WEBER & Co. are about to move from their present location at 116 Woodward avenue, Detroit, Mich. across to 121-25 Woodward avenue. The increase in facilities thus secured is demanded by their enlarged business and in their new quarters they say they will have one of the finest stores in the West.

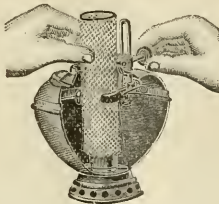
SIDNEY SHEPARD & Co., Buffalo, N. Y., issue a list of goods, comprising broken assortments, overstocks, &c., which they are offering at special net prices. This is accompanied by circulars illustrating elbows, Lightning freezers, milk cans, registers, ventilators, lemon juice extractors, nestable strainer pails and sanitary garbage cans.

BERT MILLER, dealer in stove and house furnishing goods, Waynesboro, Franklin County, Pa., also does work in roofing, tinning, plumbing, stove and wringer repairing. He desires that manufacturers and dealers send him circulars with price-lists of the goods in his lines.

JOHN H. WILBOURN, 180 Eddy street, Providence, R. I., is about to start in the hot air, ventilation and general tinsmithing business, and will be glad to receive catalogues from manufacturers in these lines.

Improved B. & H. Burner.

Bradley & Hubbard Mfg. Company, 26 Park place and 21 Barclay street, New York, are offering their extensive line of lamps for the ensuing season's trade, equipped with the B. & H. burner and new ratchet wick adjusting device, as here shown. The sectional view given in the illustration makes plain the interior mechanism. The object sought is to raise the wick with a positive or screw motion, rather than with a jerk, which often smokes or breaks the chimney. The wick can be lowered by reversing the motion or pushed down instantly with one movement by pressing



Sectional View of Ratchet Wick Adjusting Device.

on the loop. When necessary to rewick the burner the wick is turned up to the highest point, when the side clamps automatically release the wick and a new one is substituted.

Sidney Shepard & Co.,

23-25 Randolph street, Chicago, Ill., have issued a very elaborate catalogue of stamped and pieced tinware of all kinds. This is the largest catalogue issued by this house for several years, if, indeed, it does not surpass any of their previous publications. It consists of 255 broad pages devoted to illustrations and price-lists. The introductory pages show views of the Chicago house, the Buffalo house and the factories at Buffalo. A comprehensive index covers the first three pages. This is followed by a very convenient telegraph code, which has been gotten up for use in ordering tinned plates and metals. The first six pages are devoted to illustrations of pure aluminum ware. This is a branch of manufacture into which the house has recently entered and in which they have already achieved a very prominent standing. The goods shown cover a great variety of articles for culinary purposes, but it is understood that they only form a beginning to what is expected to be in the future a very large line. The succeeding pages are devoted to specimens of straight stamped ware, shallow stamped ware, pieced tinware, with a special class made under the name of Ideal tinware. Under the head of japanned ware is a large line of goods of artistic patterns. Toilet ware is a line in which the firm show a special make of high-class goods. They also make a full line of water coolers. The galvanized iron ware comprises all sorts of articles usually made of galvanized iron, including water buckets, ash or garbage pails, washtubs, &c. Miscellaneous goods cover a variety of articles made of copper, tin plate, &c. Coal vases comprise a variety of beautiful patterns. Other goods shown consist of roasting and baking pans, egg poachers, oil cans, steel milk cans, creamery pail trimmings, grocers' and druggists' tinware, spice cans and miscellaneous boxes. Being large dealers in tin plates considerable space is given to imported and American bright and roofing

plates. In connection with this are shown representations of bundles of galvanized iron, common sheet iron, sheet steel, Russia iron, &c. General tinners' stock comprises 21 pages. Furnace fittings and stove furniture occupy 17 pages. A complete list of granite iron ware occupies a considerable portion of the catalogue. This is followed by gray mottled enameled steel ware, a large line of coffee and tea pots and metal novelties of a varied character. Lanterns, lamps, oil stoves and gas stoves occupy 13 pages. Kitchen tools, such as lemon squeezers, can openers, ice shavers, &c., are shown in great variety. Considerable space is given to ice cream freezers, refrigerators, coffee mills, clothes wringers, ironing boards, &c. A specialty of this house is the manufacture of bird cages, of which an unusually large variety is shown. Timmen's tools and machines occupy the last 16 pages of the book and embrace all classes and kinds of tools used by tinners. The arrangement of the catalogue is admirable, the contents being easily referred to, and in this respect it reflects great credit on the compiler.

Perfection Coal Tongs.

The cut here shown represents coal tongs being introduced by the Cincinnati Tool Company, Cincinnati, Ohio,



Perfection Coal Tongs.

with New York office at 67 Reade street. The tongs are designed for handling bituminous coal in connection with grate fires and are made of malleable iron. It is explained that the action of lifting the coal closes the jaws, the weight coming upon the T-shaped slide; that the heavier the lump the easier it is handled, and that a child can use the tongs with ease. The total length of the tongs is 16 inches and they are furnished in Japan and in nickel.

We learn from a correspondent in London that work is progressing on the proposed heat and light exhibition which is to be held in that city. This exhibition comprises among its promoters several influential persons formerly connected with the naval exhibition. The site of the exhibition is a short distance from Kensington station and near Olympia, which will shortly be closed.

Arrangements have been made for formally opening the new Harlem Ship Canal on June 17.

STOVE TRADE NOTES.

The Cleveland Co-operative Stove Company

of Cleveland, Ohio, issue a 12-page pamphlet entitled "Something New Under The Sun." It relates to the twin burner air tight parlor heater which is being made under Baldwin's patent. The stove is handsomely decorated, nickel being judiciously employed in connection with the base, side rails, front and top. It is designed for burning hard coal, soft coal, coke or lignite, otherwise known as Dakota coal. The main bottom of the stove is provided with openings around and near the outside, but within the ornamental casing; also with openings connected with air ducts in the center. These receive the air from beneath the stove and allow it to pass upward, becoming highly heated in its progress, and is discharged into the room through openings in the ornamental casing at different heights, and also at the top. The ash base has two entirely separate doors, each provided with air tight draft openings quickly operated by a screw motion. At the top of the ash base are two distinct duplex grates, one over each ash pan. Above the main fire pot, which is oval in form, and connecting with it, are two compartments, dome shaped at the top, and provided with separate draft outlets. Each of these compartments has a feed door fitted with an air tight draft or check damper. The draft outlet of each compartment is opened and closed by a single reversible damper operated by a handle projecting in front near the top, and so arranged that when the draft outlet over one of the compartments is closed the other is opened. The fire pot and its connecting compartments are made of cast iron, very heavy and durable. The stove may be used as a double heater by simply removing the ornamental swing top, which discloses an open work cover arranged with a collar for receiving the pipe for the second story. In operating the stove the fire is started in the usual manner and the coal supplied through either or both the feed doors. After combustion is well under way in each of the lower fire chambers one of the upper chambers is filled about half way and the draft outlet damper in the opposite chamber is opened. When the fire in the chamber which has been partially filled is fairly burned through the main draft damper is reversed and the other chamber is filled, and then fuel is supplied to each chamber alternately, making sure always that the draft damper outlet is closed and the screw damper in the front door opened, as occasion may require, in the chamber last supplied with fuel. In order to keep the fire over night or for a longer period one chamber is left entirely filled with fresh fuel while the opposite chamber is only partially filled. All dampers and drafts are closed tight as well as the main draft outlet of the chamber last filled. The pamphlet which the company have issued shows a sectional view of the Twin Burner air tight heater, indicating the plan of construction. There is also given a copy of the application for patent by William W. Baldwin of the company. Extensive arrangements are being made to place this stove upon the mar-

ket in quantities, and the company are of the opinion that probably three-quarters of their foundry capacity will be turned upon this one stove before the season is over.

The Perry Stove Company

Upon the application of the trustees of the Perry Stove Company of Albany, N. Y., an application for a voluntary liquidation has been filed in the Supreme Court, and Judge Fursman has appointed Gen. Selden E. Marvin of Albany as receiver, who has taken possession of the affairs of the corporation. The receiver is authorized to continue the manufacturing and business without interruption, and with the complete stock on hand all orders can be filled with usual promptness. The stockholders of the Perry Stove Company held their annual meeting last week, and decided that the condition and the prospects of the company made it undesirable to continue the business longer on its present basis.

The company was originally started six years ago with a capital stock which has proved inadequate for the prosecution of its work on a scale large enough to be profitable, and in the depressed conditions of business that have existed it has not been found feasible to increase it. It has, therefore, been wisely decided to liquidate its affairs in a voluntary manner as provided by law, while its assets are amply sufficient to meet its obligations. With property which is valued at nearly three times the amount of its indebtedness, there is felt to be no doubt of its meeting its obligations in full; but as there must necessarily be time required to accomplish this, it seemed best to place the affairs of the company under the protection of the court, in order that its valuable assets might be preserved from needless impairment for the benefit of those to whom they belong. In the selection of Gen. Selden E. Marvin as receiver it is believed that this result will be insured and that every interest involved will be scrupulously guarded.

The plant on Van Rensselaer Island is well located and conveniently arranged. It is, of course, in the line of the receiver's duty to accept any advantageous offer he may receive for the plant, and he will no doubt do so, although the expectation is that it will be run for the present without interruption. An opportunity is thus afforded for getting possession of a stove plant with capacity of from 4000 to 5000 tons annually, and carrying with it the name and prestige of one of the oldest houses in the trade.

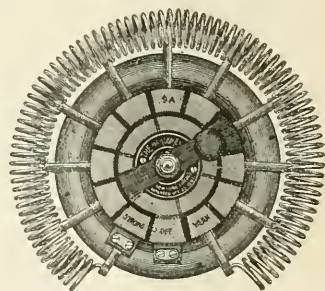
The new building which is being put up by Terstegge, Gohmann & Company of Louisville, Ky., will be of brick, and cover an area 131 x 60 feet. It will be three stories in height, of slow burning mill construction, and is expected to be completed in about two months. The first floor will be used for finishing and mounting rooms and the second and third stories for storage purposes. The new building will have an hydraulic elevator which will serve not only the new structure, but also the company's brick warehouse adjoining, as it will be located

just between the two. The elevator and the staircase will be separated from both buildings by a wall, and communication with either will be had only through fire doors. The company shut down their foundry on June 11 for the purpose of removing the old structures on the site occupied by the new building.

Regulation of Current in the Plating Room.

The improved rheostat shown in the accompanying cut, and which is manufactured by the Hanson & Van Winkle Company, 219-221 Market street, Newark, N. J., is adapted for the smallest current and tanks up to the largest current and surfaces.

As is well known, different voltages are employed to operate different solutions. It is required of the electroplating dynamo that a voltage sufficiently great be generated to do the work in a solution that is of the high-



Rheostat for Regulating Current in Plating Room.

est resistance, and at the same time, deposit in low resistance solutions. Then, again, the voltage has to be great enough to overcome the resistance of the conductors to the various tanks, which frequently is unnecessarily great. The tank nearest the dynamo, with the customary method, receives the most current, and the tendency to burn and blacken is noticed in a marked degree. When metals such as silver and copper are to be deposited in connection with such metals as nickel and brass, requiring a higher electromotive force, a considerable drop in voltage is demanded in the lower resistance solutions, so as not to blacken the work. With the ordinary style of resistance board, it is pointed out, this is done at a great loss of current and work capacity of tank. When a tank is being filled with work, with the improved rheostat and circuit, the current can be entirely cut off, or partially left on, as may be desired. When the tank is full the current can be switched on, and with this rheostat sufficient current can be conveyed to the work in the fastest manner. With the old resistance boards it is said about the greatest carrying capacity that they will feed is from 25 to 35 amperes, and never over 35 amperes, the reason for this deficiency being the smallness of the resistance wires, in-

sufficient metal conductivity, combustible material for backing, &c. It is necessary to have some resistance in the circuit so as not to blacken the work. With the improved rheostat, three times the current can be conveyed without showing heat in the least in any part of the same, the resistance wires, segments, switch or base plate. If, with the old style resistance boards, more than 35 amperes are to be carried, the wire gets too hot, warps out of shape, and burns out the back or base board, which is of wood or other combustible material, blues over and melts out segments, &c. With the improved rheostat, it is claimed, all this is overcome, it being constructed upon scientific principles, the large, heavy copper segments having great carrying capacity, with a most solid switch held against segments, and heavy, strong spiral springs, firmly held down with the two nuts, all mounted upon a cast iron base plate and insulated entirely with non-combustible material. This rheostat is claimed by the manufacturers to have exceptionally great carrying capacity, it having at the same time sufficient length of wire to allow of tuning down the highest electromotive force used in electroplating to the lowest degree that is ever called for without showing heat or any unfavorable symptoms. It is further claimed that by the use of this rheostat any plating room using two or more tanks can be doubled in capacity, provided the dynamo has current capacity. These rheostats are manufactured in three sizes, with various resistance in each size, suitable for all classes of work; so that they may be used in controlling the shunt field of the dynamos manufactured by the same company, or for resistance on tanks of different capacities, and for controlling main line currents. They are, it is said, used equally well in the field of the dynamo, by means of which the voltage may be reduced from 5 or 6 volts to 1 or 2 volts, for such work as electrolytizing from an acid solution of copper, &c., avoiding an unnecessary consumption of power. The Hanson & Van Winkle Company, we understand, are willing to send a sample rheostat on approval to responsible parties, on being advised as to the size tank or use for which it may be required.

ODD PLATES.

JUDSON A. GOODRICH, who has for some years managed the business of the American Radiator Company in New York City, has purchased of the estate of the late A. C. Barstow of Providence R. I., a large block of the stock in the Barstow Stove Company, and has been elected manager to represent that company in New York City, where his labors will commence August 1, when he will be glad to welcome his old friends and the trade in general. The company's offices and showrooms are located at 228 Water street, where they exhibit a full line of the well known Bay State stoves and ranges.

THE Cincinnati Heating & Ventilating Company, Cincinnati, Ohio, is the title of a newly incorporated concern, having a paid up capital of \$50,000, and engaged in the production and installation of warm air heating and ventilating apparatus in private and public institutions, hotels, residences, &c. The officers of the company are H. P. Deuschler, president; S. H. Small, vice-president; H. H. Lippelman, treasurer, and J. W. Johnson, secretary; who with L. E. Jordan form the Board of Directors. Mr. Jordan has for years been engaged in mechanical pursuits, and is said to pos-

sess a thorough knowledge of the principles involved in heating and ventilation. All the officers of the company have had long experience at the business. The shops of the company are located at Hamilton, Ohio, 25 miles from Cincinnati, and are conveniently connected with the Cincinnati, Hamilton & Dayton and the Pittsburgh, Chicago & St. Louis railroads. For the present, three sizes of the portable style of furnace will be made, but these by a system of combination can, it is claimed, be made to produce any desired heating capacity. For public work two sizes will be made, which can also be combined when necessary. The conveniences and practical principles involved in their construction, it is stated, will assure for them an undoubted success. All goods put out by the company will be under the one general title Ideal.

THE O'Connor Furnace & Range Company of St. Louis, Mo., have filed articles of incorporation. The capital stock is placed at \$10,000. The incorporators are H. C. Thompson, H. W. Curtin, D. J. O'Connor and E. J. O'Connor. The company will manufacture heating apparatus, house furnishing goods, &c.

JOHN J. GRAVES of Buffalo, N. Y., has been granted a patent for a parlor heater in which the hot air flues are claimed to be arranged upon an improved plan. The stove consists essentially of two casings, the inner of which forms the combustion chamber while the outer one is ornamented to give the stove a pleasing appearance. The hot air flues are arranged between the outer and inner casings, and through them the air is passed and heated. In the rear of the stove is a projection of the outer casing intended to support a vessel containing water. In order to properly direct the heated air in its upward passage through the flue or flues between the outer and inner casings so that it should be most efficient in heating the water vessel, a deflecting plate is provided a short distance below the top of the projection. The plate is so inclined that the heated air has to pass in nearly a horizontal direction immediately below the top of the projection, after which the air escapes into the upper portion of the flue, and then passes out into the apartment through openings provided for the purpose. The interest of Mr. Graves in this patent has been assigned to Sherman S. Jewett & Co. of Buffalo, N. Y.

THE Gem City Stove Mfg. Company of Quincy, Ill., have issued a poster illustrating the American Gem and the National Gem six-hole ranges, provided, among other features, with square ovens. The stoves are of handsome ornamentation, substantial appearance and embody the modern improvements. The manufacturers make a point of the large ovens, handsome appearance and satisfactory operation of these stoves. The company are also distributing an illustrated circular of Wynn's Black Silk stove polish and White Silk cream metal polish, for which they are Western agents.

TERSTEGGE, GOMMANN & Co. of Louisville, Ky., are bringing out two new heating stoves as well as a new coal stove. They have also made a number of changes in their steel ranges.

"PLEASANT HOMES" is the title of a 140-page volume of convenient size for reference which reaches us from the Anshutz-Bradberry Company, Pittsburgh, Pa. It is printed in two colors and bound in neat covers colored a deep blue with silver letters. The text is made up of a number of suggestions

respecting warm air, steam and water apparatus, together with tables of dimensions, capacities, &c., prepared with special reference to the Tremont all steel and iron and steel smoke, soot and gas consuming furnace, steam and hot water boilers. Many of the illustrations consist of buildings, both public and private, which have been heated with the company's goods. Some of the broken views of heaters are printed in colors, with red indicating the fire and the course of the products of combustion. A few pages are devoted to the Perfect Tremont six-hole range, made in three sizes, and to the Tremont steel plate range, made for hard coal, soft coal, wood or gas. A long list of testimonial letters is also presented, showing the satisfaction which the company's goods have given to those who have practically demonstrated their merits.

THE Clark Stove Company, Kansas City, Mo., manufacturers of the Clark steel range, are preparing to move into their recently completed factory, and expect to be in operation by July 1. The building is 68 x 350 feet, two stories in height, and built entirely of brick. The works will have a capacity of 40 ranges per day, which can be increased to 75 ranges should the business warrant it.

THE Detroit Stove Works of Detroit, Mich., received on June 12 a letter from a customer in Oshkosh, Wis., stating that on June 8 he sold and shipped a Home Jewel cook stove destined for Sidon, Syria. It appears that a person from Oshkosh is going home to Syria to live, and as there are no stoves in that country he decided to take one along with him.

WE are indebted to Fred E. Lee, manager of the Estate of P. D. Beckwith, Dowagiac, Mich., for a copy of a neatly printed pamphlet which they are distributing this year as an advertising novelty. With regard to the general make up and mechanical execution it is only necessary to say that it is from the press of Gies & Co., Buffalo, N. Y. The covers are executed in imitation of water color, the front bearing the title "A Good Thing From Doe-Wah-Jack," while the back cover is embellished with an illustration of a mounted horseman gazing at a quaintly fashioned sign which reads: "See the name on the leg. Round Oak Heating Stoves Sold Here." Beneath the picture are the words, which apparently express the sentiments of the rider: "Well, well; 1895, and the Round Oak still in the lead." The pages within the covers are devoted to a brief history of the Round Oak heating stove, together with an enumeration of its merits and constructive features. The central engravings occupy facing pages, one representing the common way of removing ashes from a stove, accompanied by clouds of dirt and smoke, while the other picture shows the cleanly method employed in connection with a Round Oak heater. In referring to this point, the manufacturers state that by their method of removing the ashes the little dust that arises is drawn back into the stove owing to the small draft or ash pit door, which concentrates the full power of the chimney upon this small space, made small for the purpose of minimizing the possible leakage of air below the fire. This feature is referred to as the one which has made the Round Oak stove famous.

SILVER & Co., manufacturers of household novelties, Brooklyn, N. Y., are experiencing a very excellent demand for their Brooklyn oil stoves this season. The firm have adopted the name of Brooklyn for the entire line

of gas and oil stoves of their manufacture. The company's factory, at 304-314 Hewes street, which has been recently enlarged to meet their growing business, has been running full in every department. A good demand is also reported for Silver & Co.'s extensive line of aluminum household ware and novelties, to which several additions have been made recently.

The Girard Stove & Foundry Company are busily engaged in tearing down their shops at Girard, Ohio, for the purpose of moving them to their new location at Youngstown. The company will erect at once a new warehouse and mounting room 40 x 100 feet in plan and three stories in height. They have added to their assortment of goods a new line of wood stoves and anticipate a good fall trade.

The S. Obermayer Company of Eighteenth and Rockwell streets, Chicago, Ill., are distributing a postal card calling attention to their foundry facings and foundry supplies. The statement is made that they carry a very large and complete stock, and that a catalogue and special circulars will be sent on application to those interested.

F. H. MOORE of the Howard Furnace Company, Syracuse, N. Y., met T. P. Healey, manager of their Boston house, at the New York office, 210 Water street, this week. Both report business in Howard furnaces on the increase.

The Canadian Nickel Mines.

The mines at Sudbury, in the northern part of the Province of Ontario, turned out more nickel last year than in any previous year, but, after all, that is not saying a great deal. The official figures are as follows:

Ore raised.....	112,637 tons.
Ore smelted.....	87,916 tons.
Ordinary matte.....	10,410 tons.
Bessemerized matte.....	1,470 tons.
Nickel contents.....	2,570½ tons.
Copper contents.....	2,748 tons.
Cobalt contents.....	3¼ tons.
Value of nickel.....	\$612,724
Value of copper.....	\$495,750
Value of cobalt.....	\$1,500
Number of men employed off and on.....	655
Wages paid.....	\$811,719

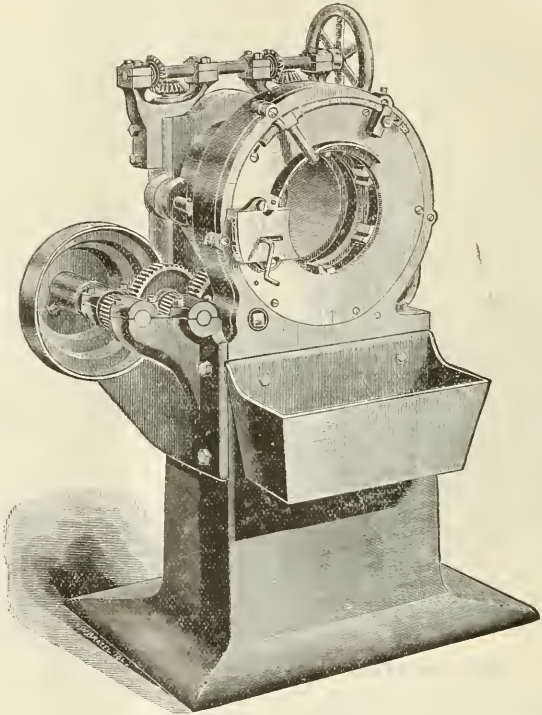
There are five mining companies at work on seven locations. Since operations began in 1888 the nickel contents of the ore smelted have amounted to about 10,000 tons, the copper to about the same. All the matte is shipped to the United States and Europe, where the nickel, copper and cobalt are extracted from it in the forms required for commercial use. The selling price at Sudbury of the metal contents was as follows in 1894: Nickel, per ton, \$238.36; copper, per ton, \$71.23, and cobalt, per ton, \$461.54. The average price of refined nickel in England in 1894 was about 36½ cents, Canadian and American currency, per pound. In 1876 refined nickel was worth \$2.60 per pound in the United States. The price fell on the opening in 1878 of the mines in the French colony of New Caledonia, and the development at Sudbury has further reduced it. Thus far, however, the Canadian mine owners have not made as much money as they expected to make.

In consequence of many complaints which have been received from time to time at the Navy Department from persons who have been obliged to live aboard United States war vessels, regarding the lack of proper ventilation in those ships, an inquiry into the subject is now being made by the Navy

Department. It is contended by many naval officers that the devices for increasing the circulation of air on board have either failed or are generally unreliable. Under present conditions, in the majority of naval vessels, if the wind happens to be in the direction in which the ship is steaming, it frequently occurs that the ventilation below deck is utterly inadequate. The navy medical officers have repeatedly asked that some improvement on this condition of things shall be introduced. They say that, in some ships, even in the quarters where the sick are placed, the supply of fresh air is not at all sufficient. The board of experts now sitting will, it is expected, soon present a report pointing out where the present faults in ventilation can be remedied

readily replaced by chasers cutting any style or pitch of thread, either right or left. The vise is self centering and is actuated by rack and pinion to feed the pipe into the chasers. Three sizes of this machine are built, one with a range of from 1 to 4 inches, one with a range of from 1 to 6 inches, and the machine as illustrated, with a range of from 2½ to 8 inches. As no lead screw is used with this machine any style or pitch of thread can be cut that is desired.

By means of a recent French improvement, the process of galvanic bronzing is said to have been made not only more simple, but capable also of giving every tone, from that of bar-



THE MERRELL PIPE MACHINE.

and suggesting methods by which this may be done.

The Merrell Pipe Machine.

The combined hand and power pipe threading and cutting machine designed and built by the Merrell Mfg. Company of Toledo, Ohio, is mounted on a base and driven by compound gears with cone pulley, and is so arranged that either hand or power can be used at will, or the machine can be readily taken from its base and used as a regular portable hand machine. The machine illustrated has a range of from 2½ to 8 inches. There are six chasers with this machine, which are set by graduation to any size desired, and are released from threading while in motion, opened to permit the pipe to be cut off and closed instantly and positively. One set of chasers is used to thread several sizes of pipe. They can be sharpened by grinding and are

bedian bronze, to antique green, governed by the length of time that the copper is allowed to remain in contact with the liquid. After the piece has been well scoured it is covered by means of a brush with a mixture composed of 20 parts of castor oil, 80 of alcohol and 40 parts each of soft soap and water. Thus treated, the piece left to itself for a period of 24 hours becomes bronzed, and if the duration of contact be prolonged the tone changes, a very great variety of tones, pleasing in their appearance, being obtainable in this manner. The drying is finally effected with hot sawdust, the only remaining operation being then that of coating the piece with a colorless varnish largely diluted with alcohol, thus insuring work of the finest character.

A war has begun among the anthracite coal producing companies. The Lehigh Valley and Reading lines have both begun to work full time during the current week.

TRADE REPORT.

The Iron Market.

The rush in the trade continues and has been gaining headway during the past week at a rate which is beginning to frighten some of the more conservative. To men who have been starving so long a timid lecture on the evils of glutony is not very impressive.

The one single article which breaks the cheerful monotony of advances in price is Coke, in which a merry war seems again imminent. Some one has taken away somebody else's pet customer and swift retribution has followed. Contracts have been made at lower price, and the echo of the threatened advance to \$1.50 has died away.

The rolling mills are very busy throughout the country, and the demand is heavy, although no very large individual transactions have cropped up. The Western Bar manufacturers have raised their prices \$1 per ton and their Eastern colleagues have followed suit with 0.1c. per lb.

The makers of Foundry Iron have jumped another 50c. a ton in all parts of the country. The leading Western distributing points report a very active week, Chicago in particular claiming to have beaten its own record in the volume of sales.

Pig Iron.—At a meeting in Philadelphia of the furnace managers of the Lehigh and Schuylkill Valleys, a further advance of 50 cents per ton in the price of Pig Iron was agreed to. The Southern furnaces announced a further advance of 50 cents a ton late last week. Business in the New York market has been fairly active, and although buyers are more inclined to resist the latest advance they are making further purchases. We quote #13 for No. 1; #12 for No. 2, and #11.50 to #11.75 for No. 2 Plain, Northern brands, tidewater delivery. Southern Iron, same delivery, is selling at #12.50 to #12.75 for No. 1; #12 to #12.25 for No. 2; #11.60 to #11.75 for No. 3; #11.75 to #12 for No. 3 Soft, and #12 to #12.25 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$11.25 to \$11.50.

The Philadelphia Pig Iron market is very strong, and under a heavy demand prices have an upward tendency. At an informal meeting of the Eastern trade held at Philadelphia this week it was agreed that prices should be advanced 50c. per ton, but as their quotations have varied so much in the past, it leaves the actual selling prices as indefinite as ever; \$11.75 for No. 2 Foundry is probably a very inside figure, and there is no reason why prices should not be better, as there is plenty of business and only a very moderate amount of stock to draw from. Southern Irons are practically out of the market, and as a considerable addition to the output will be made by Eastern furnaces during the balance of the year, it is probable that consumers in this vicinity will depend to a greater extent than usual on the local supply. The general situation is very satisfactory to producers of Pig Iron, as there is every reason to expect a continued

good demand at improving prices. General quotations for Philadelphia and vicinity are about as follows:

Standard No. 1 Foundry X.....	\$12.75 to \$13.25
Standard No. 2 Foundry X.....	11.75 to 12.00
No. 2 Plain.....	11.25 to 11.50

Unusually heavy sales have been made of local Coke Iron in the Chicago market. The advance in prices brought in a fresh crop of buyers, as had been anticipated. Large consumers who had been deferring their purchases finally made up their minds that higher prices were here to stay and covered their requirements well into the future. Seldom, if ever, has there been a week of greater sales in the Chicago Pig Iron trade. The enormous business, as might be expected, led to another advance and prices are now marked up 50c. Agents of Southern furnace companies report a fair business at the prices prevailing last week and an additional 50c. was added on Monday. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	11.50 to 12.00
Local Coke Foundry, No. 2.....	11.25 to 11.50
Local Coke Foundry, No. 3.....	10.75 to 11.00
Local Scotch No. 1.....	11.50 to 12.00
Ohio Strong Softeners, No. 1.....	13.00 to 13.25
Southern Silvery, No. 1.....	12.75 to 13.25
Southern Silvery, No. 2.....	12.25 to 12.75
Southern Coke, No. 2.....	11.50 to 11.75
Southern Coke, No. 3.....	11.25 to 11.50
Southern, No. 1 Soft.....	11.50 to 11.75
Southern, No. 2 Soft.....	11.25 to 11.50
Alabama Car Wheel.....	18.00 to 17.00
Jackson County Silvery.....	15.00 to 15.50
Other Ohio Silvery.....	14.25 to 14.50

The Pittsburgh market is very firm and iron is hard to obtain, some of the Valley furnaces declining to quote, while others have no iron to spare this side of September. Several of Valley furnaces now on Foundry will go on Bessemer within a few days. All indications point to higher prices. We quote as follows:

No. 1 Foundry.....	\$11.25 to \$11.50
No. 2 Foundry.....	10.75 to 11.00

The Iron trade in the Cincinnati district continues full of vitality and buoyancy. Large sales of Pig Iron are being made, and prices are advancing rapidly. The latest interesting information is another advance of 50c. per ton on the Southern product, and an irregular rise on the Northern metal. It is not strange that the market has advanced so rapidly when the conditions which prevail are taken into account. It is reported that stocks at furnaces other than those which work their own Pig are little more than a two weeks' supply, and that the active stocks are already working at full capacity, while the increased consumption creates an active and increasing demand. It is further stated that the idle furnaces in the South—that is, the modern equipped plants—are so bound by local conditions that they cannot be brought into the market until a further material advance in prices has been established. The buying of Pig during the past week has been well distributed among foundries, mills and agricultural works. In the aggregate sales have been unusually heavy, one local house booking orders for 9000 tons in one day, the largest single transaction of which was 2000 tons. The price of fuel Coke, it is

stated, will be advanced on the first of next month. Quotations are given as follows:

Southern Coke, No. 1.....	\$11.00
Southern Coke, No. 2.....	10.50
Southern Coke, No. 3.....	10.25
Southern Coke, No. 1 Soft.....	10.25
Southern Coke, No. 2 Soft.....	10.25
Ohio Soft Stone Coal, No. 1.....	14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	12.50
Lake Superior Coke, No. 2.....	10.75 to 11.50
Tennessee Charcoal, No. 1.....	14.00 to 14.25
Tennessee Charcoal, No. 2.....	13.00 to 13.50

The St. Louis market continues to show steady and decided improvement. The sales are heavier and inquiries received indicate an increased demand very shortly. Prices have been again advanced, this time scoring 50c., making No. 2 Foundry \$8.25, f.o.b. Birmingham, or \$11 St. Louis. The market is in excellent condition. The recent advance made in Northern Irons has encouraged Southern producers to maintain full prices and offers of orders for less than the prices quoted below are refused. Consumers are endeavoring to make contracts for their supplies for the balance of the year, but are not encouraged to do this by the furnacemen, as the outlook is very promising and still higher prices are anticipated. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$11.50 to \$11.75
Southern Coke, No. 2 Foundry.....	11.00 to 12.25
Southern Coke, No. 3 Foundry.....	10.75 to 11.00
No. 1 Soft.....	11.00 to 12.25
No. 2 Soft.....	10.75 to 11.00

Metal Market.

Pig Tin.—At the opening of the week prices were carried upward for prompt and current month delivery. There was not enough buying interest, however, to hold the market against a moderate selling pressure and prices receded again. On the decline dealings were larger, and there seemed to have been more tin for sale at the lowest prices than there was at the highest point. Outside of speculative circles considerable tin has been moved on old contracts and more recent purchases, but liberal arrivals have prevented any diminution in stocks at first hands. Straits shipments during the first half of June were quite large, including 450 tons to the United States, 1600 tons to England and 540 tons to the Continent. Some improvement is noted in the demand from consumers and out-of-town dealers. Small lots of Straits Pig from store are quoted at 15½c. to 15¾c. per lb.

Copper.—The leading mining companies have not retreated from their former position. At all events they profess to stand out firmly for late highest prices, and in some instances claim to be unable to fill orders requiring delivery this month or next. One Lake company reports having recently sold 1,000,000 pounds at 10½c. for Autumn delivery, and that price is the one generally asked. However, enough Lake Copper has come out from on e source or other to disturb values on spot delivery, several sales having been made at about ½c. lower. Electrolytic and casting stock have also eased off

somewhat. Jobbers' prices for Lake Ingot in moderate sized lots are 11c. to 11½c., and for G. M. B. 10½c. to 10¾c. per lb. The statistics of May production, showing the largest output for any month thus far this year, have doubtless had some influence in the direction of causing some uneasiness, particularly among holders who can realize a good margin of profit in selling at the lowest price above quoted.

The monthly production of Copper in the United States has been as follows, according to John Stanton, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second, being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.			
	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons.
Second half 1892.....	59,239	6,287	65,526
First half 1893.....	62,470	6,478	68,938
Second half 1893.....	67,290	6,252	73,542
First half 1894.....	186,129,760	12,730	142,480
Second half 1894.....	73,951	8,640	81,991
Totals 1894,193,543	17,080		139,623
1895.			
January.....	10,094	1,600	11,694
February.....	11,120	1,600	12,720
March.....	12,553	1,600	14,153
April.....	11,944	1,600	13,544
May.....	13,260	1,600	14,860

Sheet Copper.—The improvement noted in the demand for Manufactured Copper last week has not quite kept up to the higher level during the week just ended, but the falling off is regarded as merely temporary. In fact, the latter days of the week already developed a better run of orders than those with which the week opened. A marked tendency is noted on the part of consumers toward a desire for placing orders for deliveries extending into the latter months of the year. Evidently the expectation of higher prices is responsible for this feature. Manufacturers are not, however, inclined to contract far ahead at the present rates, the expectation being that prices will be advanced on all lines of Manufactured Copper and Brass in the near future. Cornice copper moves freely, and a very large demand from the building trade is looked for in the coming months. Small lots of Sheet Copper from store are quoted at the net price of 14c. per lb.

Pig Lead.—Demand has been very moderate throughout the week and prices have declined a fraction. The center of weakness was lower prices in London and consequent poor prospect for the liberal export movement that has been more or less confidently expected for some time past. With foreign outlet probabilities less encouraging Newark is looked upon as a formidable factor in the home market, and Western producers, rather than hold the umbrella, have sought trade at the expense of concessions. Consequently prices for Common Western have weakened a fraction.

Spelter.—This metal has been somewhat affected by the weakness in other lines, despite the strong statistical position at producing points and the opinion, quite freely expressed of late, that Spelter was beyond the influence of outside conditions. Comparatively

few sales have been made here during the week, and purchases in the West by galvanizers have fallen off also. Nevertheless consumption in the aggregate is fairly large and prices maintain their firmness. In small jobbing parcels good brands of Western Spelter fetch 4c. to 4¼c. per lb.

Antimony.—Business has been of a routine type, moderate all told and mainly at former prices. quotations ruling are 9c. for Cookson's and 8c. for Hallett's, in small lots.

Nickel.—Sellers' quotations are 35c. to 40c., according to quantity and terms.

Tin Plate.—The leading feature of the week in the Tin Plate market has been a remarkable stimulation in the demand for Coke Plates for near future shipment. The movement is due to the increasing requirements of the canning trade, which are considerably above expectations, added to which the threatened strike among Welsh Tin Plate workers, together with tardy deliveries by American makers, have caused a difficulty in having orders accepted for any deliveries prior to September. The stocks of Foreign Cokes in hand are unusually small. These circumstances have brought about a rise of from 5 to 7½c. per box for both foreign and domestic Cokes. The oil men are reported to have placed orders for at least 40,000 boxes IC 14 x 20 for future delivery, at a considerable advance over the current rates. Retail business in both Bright and Roofing Plates has also been rather more active, and prices are firmer all along the line.

A special London cable dispatch of June 19 to *The Iron Age*, reports on the British Tin Plate market as follows: Tin Plate is much firmer and prices on the average are 8½c. dearer. A large quantity of spot Cokes has been sold at top prices. Buyers are eager for more at the figures, but makers ask higher rates owing to threatened strike of workmen. More orders have been taken for Roofing Plates for America, and there is still a good demand. There is improved demand for Black Plates at £7 12s. 6d. to £7 15s., f.o.b. Wales. Tin Plate quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, IC 14 x 20, 9s. 6d. to 9s. 7½d.
 Siemens Cokes, IC 14 x 20, 9s. 9d. to 9s. 10½d.
 Ternes, 20 x 28, ... 18s. to 22s. 6d.
 Charcoals, IC 14 x 20, ... 11s. to 13s. 6d.

Sheet Iron.—The mills are so crowded with work that some of them are refusing to take orders for shipment before September. Buyers have considerable difficulty in finding mills to take any business at all. The demand for Galvanized Sheets continues heavy, and the price has again advanced during the week to the highest point known in some years. Small or moderate sized quantities from store are quoted at 70 per cent. off. No 27 Common Iron in small lots rules at 3c. per lb. Black Plates for thinning purposes are firmer in price, and prompt shipments of this material are as difficult to obtain as are those for other descriptions of Sheet Iron.

The R. & B. Mfg. Company, Philadelphia, who make electrical specialties, are putting on the market a new vibrating push button which causes a slight noise at the button when the bell at the other end of the wire is ringing, enabling the person who presses the button to know that the bell is ringing. The advantage of this feature of the button has already brought many orders to the company.

Chicago Report.

Scrap.—A very heavy business is now being done. Dealers quote their buying prices as follows, Chicago delivery:

	Per net ton.	Per lb.
No. 1 Wrought Scrap.....	\$7.50	8.00
Machinery Cast.....	6.00	6.50
Malleable Cast.....	6.00	6.50
Stove Plate (free of burnt).....	4.50	.....
Burnt Iron and Grate Bars.....	2.50	.....
Sheet Iron and Hoops.....	2.50	.....
Plow Steel and Breaking Stock.....	4.50	.....
No. 2, such as Shovels, Hoes, &c.....	3.00	.....
Old Boilers—whole (Iron).....	3.00	.....
Iron—cut in single Sheets and Rings.....	6.00	.....
Old Gas-Pipe and Boiler Tubes.....	6.00	.....
Cast Borings.....	3.75	.....
Turnings.....	4.50	.....
Horsehoes.....	8.50	9.00
Copper Wire and Heavy.....	8	8
Copper Bottoms.....	7½c	.....
Copper Clips.....	7½c	.....
Heavy Brass.....	6½c	.....
Light Brass.....	3½c	.....
Pipe Lead.....	2½c	.....
Tin Lead.....	2½c	.....
Zinc.....	2½c	.....
Rubber.....	3	3

Anthracite.—Trade is quiet. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto. Grate, and Ch.
Chicago, Ill.....	\$4.60 \$4.75
Milwaukee, Wis.....	4.60 4.75
Kansas City, Mo.....	7.80 7.95
Council Bluffs, Iowa.....	7.80 7.95
Lincoln, Neb.....	7.95 8.10
Sioux City, Iowa.....	7.80 7.95
Aberdeen, S. Dak.....	7.85 8.00
Dubuque, Iowa.....	5.90 6.05
Madison, Wis.....	6.10 6.25
St. Paul, Minn.....	7.10 7.25
Burlington, Iowa.....	6.10 6.25
Des Moines, Iowa.....	7.60 7.75
Davenport, Iowa.....	5.90 6.05
St. Joseph, Mo.....	7.80 7.95
Leavenworth, Kan.....	7.80 7.95
Omaha, Neb.....	7.80 7.95

Colorado Anthracite

COLORADO FUEL & IRON COMPANY.

Denver.....	\$8.00
Pueblo.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and Missouri River.....	8.85

LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, have recently made some considerable shipments of Enamelled Ware in response to orders from Valparaiso and Buenos Ayres. They report that the demand for this class of goods in the Argentine Republic and in the South American States generally is growing rapidly since the financial and political atmosphere in those countries has cleared.

THE ROME, N. Y., BRASS & COPPER COMPANY have elected the following directors: Willey J. P. Kingsley, Harmon G. Utley, Allen M. Wardwell, Daniel G. Dorrance, William R. Huntington, Thomas H. Stryker, Jonathan S. Haselton, John G. Bissell and Christopher C. Reid. The officers are: President, W. R. Huntington; vice-president, W. J. P. Kingsley. Executive Committee: W. R. Huntington, W. J. P. Kingsley, H. G. Utley, J. S. Haselton.

JOHN WOOD & BROS. COMPANY and the Alan Wood Company, manufacturers of sheet iron and steel, Conshohocken, Pa., have voluntarily notified their employees that, on and after July 1, their wages will be increased 12 per cent. This increase affects about 1000 workmen.

CONDITION OF THE Hardware Trade.

A FIRM and confident tone characterizes the market, some further advances having been made in the prices of goods in which the raw material is an important part of the cost. In some lines of general Hardware there is a disposition on the part of manufacturers to withdraw some of their extreme prices and in general to pursue a conservative course, and some of them are refusing to book heavy orders for future delivery at the lowest prices now ruling. Conferences in regard to several lines are progressing, and it is not unlikely that advances in at least some of them may result. Careful and conservative men are watching the course of things closely, to see whether or not the advances made will be maintained, and are looking with some apprehension on the disposition which is manifested in some quarters to advance prices too rapidly, with the probability of a reaction, sooner or later, which would have an injurious influence on the market. The effect of the summer dullness is looked for with much interest, as the market if sustained during the quiet months will be full of promise for the fall.

Advices from Chicago.—The Hardware trade, especially that of manufacturers' agents, is favorably affected by a severe cut recently made in freight rates to the West and Southwest. Notice of restoration of rates has been given, so that only a limited time will prevail in which to take advantage of low rates, which will of course lead to active buying during the remaining time. Apart from this condition the Hardware trade holds up unusually well for the time of the year. The demand is of a general character, with scarcely any speculative buying in staple goods. These are being taken simply to cover the requirements of the trade, and no question is now heard as to the stability of higher prices. Manufacturers are withdrawing quotations on general Hardware and jobbers look for a material advance all along the line at an early day. Tin Plate is active but prices are unchanged.

Notes on Prices.

Wire Nails.—During the past week Wire Nails have continued in excellent demand, orders coming in much beyond the capacity of the mills to execute them, and the manufacturers are refusing to accept orders on any terms for delivery after June 30. Small lots from store in New York are regularly quoted at \$1.55 base, and from dock, \$1.51. The market is so bare of goods that prices are to a good extent nominal, and any mills which are in a position to ship promptly could readily obtain an advance on the carload price. The manufacturers were in conference this week in Pittsburgh. As a result of the meeting the price of Wire Nails for July delivery has been advanced to \$1.50 per keg, in carload lots. In 1000 keg lots taken out during July a rebate of 10 cents per keg will be made. Concerns represented at the meeting state that they are crowded with orders and have no Wire Nails to sell for June delivery and some of them have very few to spare for July delivery.

Advices from Chicago.—The demand is unabated, but factories are full of work for June and can take no more orders. Inquiries are coming in for July. The purchase of the Baackes Wire Nail

plant at Cleveland by the Consolidated Steel & Wire Company is regarded here as a very valuable acquisition by that company. It gives them another outlet at a very important trade center. Most jobbers have advanced prices on small lots to \$1.50, although some still sell at \$1.40.

Cut Nails.—The condition of the Cut Nail market is similar to that of Wire Nails. Small lots from store in New York are held at \$1.40 base. There is, however, difficulty in obtaining Nails, and the trade generally are anticipating an advance, notwithstanding the fact that the prices of the Cut Nails are closely approximating those of Wire Nails.

Advices from Chicago.—Manufacturers report a strong demand with the local factory well sold up for June. Quotations are not yet out for July. Jobbers quote small lots from stock at \$1.25.

Barb Wire.—The Barb Wire market continues strong and with an upward tendency. The demand is exceptionally heavy for the season.

Advices from Chicago.—Manufacturers are having an extraordinary demand for the time of the year. Usually the demand is cut off very sharply in the early part of June, but trade is still in full tide. The cut in freight rates to the West and Southwest is expected to have a decidedly stimulating effect on this business for the next week or so. Jobbers' quotations on small lots vary from \$1.65 to \$1.80 on Painted and \$2 to \$2.15 on Galvanized, some of them being quite conservative in following up advances.

Garbage Can.—Sidney Shepard & Co., Buffalo, N. Y., who are putting on the market the Sanitary Garbage Can described in our last issue, are selling it to the trade at \$13 per dozen for the 14-inch and \$24 for the 18 inch, subject to a discount of 50 per cent.

Watering Pot.—The Standard Watering Pot, described in our issue, June 1, as put on the market by the Cleveland Stamping & Tool Company, Cleveland, Ohio, is sold to the trade from the following list, which is subject to a discount of 20 per cent.:

	8 qt.	10 qt.	12 qt.	14 qt.	16 qt.
Per doz.	\$7.20	9.00	10.00	12.00	14.00

Bolts.—The following are the advanced prices recently adopted by the manufacturers of Carriage and Machine Bolts, Bolt Ends, &c.:

	Per cent.
Machine Bolts with H. P. Nuts.....	75 and 7½
" " C. P. C. and T.....	70 and 15
" " Nuts.....	70 and 15
Machine Bolt Blanks.....	75 and 2½
Coach Screws G. P.....	80, 10 and 5
Lag " ".....	80, 10 and 7½
Skein " ".....	80, 10 and 5
Bolt Ends, H. P. Nuts.....	80 and 2½
" " C. and T. Nuts, H. P. or C. P.....	80
Tap Bolts and Set Screws.....	65
Carriage Bolts.....	70, 10 and 5

Nuts.—An advance of about 4-10 cent per pound has been made by the manufacturers of hot pressed Nuts. The market is in excellent condition and characterized by a firm tone.

Glass.—The demand for Window Glass continues fair, absorbing, it is stated, more than is at present being produced. It is understood that stocks in manufacturers' hands vary in size, some factories having shipped Glass as rapidly as it has been made, while others have carried a portion of their entire production during the fire. The

market is reported as being firmer than at any time during the season of 1894-95, and that the shading of the prices which went into effect May 1 is exceptional. From statistics it is learned that the importation of Window Glass for April of the present year, compared with that of the corresponding month of 1894, shows a decrease in pounds approximately equal to 36,488 boxes. Present quotations of American Window Glass are on the following basis: Less than 100 boxes, 75 and 5 per cent. discount; car lots, 75 and 10 per cent., and 1000 boxes, 75 and 10 and 5 per cent. discount, the discounts applying to the list adopted May 1, 1895.

Wrought Iron Pipe.—The successive advances which have taken place are well maintained and the market has a firm tone. The volume of business is large. The manufacturers are refusing orders for future delivery. Official prices are quoted as below, but actual business is done at higher figures, orders being hard to place:

	Discount per cent.
Black Pipe, ¼ to 1½ inches.....	67½
Galvanized Pipe, ¼ to 1½ inches.....	62½
Black Pipe, 1½ inches and larger.....	75
Galvanized Pipe, 1½ inches and larger.....	65

Iron and Brass Fittings.—The manufacturers of Fittings for Steam, Water and Gas report the market in excellent condition, with an upward tendency. Several slight advances have recently been made, and the higher prices now ruling are referred to as well maintained. Some of the manufacturers have withdrawn all quotations and are refusing to book orders for future delivery.

Tire and Stove Bolts.—In accordance with the advance recently made by the manufacturers of Tire and Stove Bolts the published price of these goods is now 70 per cent. discount instead of 70 and 10 per cent. as heretofore.

White Lead.—Business has been fully as brisk as it was during the preceding week. Small orders have, in fact, been more numerous, and those for good sized lots make a gratifying total. The rumor still has circulation that corrodors intend to advance prices next month, but nothing definite as to intentions can be learned at the proper source. That the market is in good shape cannot be questioned, and there seems to be nothing in the way of an advance in prices apart from the possibility of attracting more foreign Lead to this side.

Red Lead.—The market for foreign iron. Arrivals have been heavier in delivery on former contracts and a very fair amount of new business has also been consummated. Domestic brands are unchanged in price, but meet with better sale. Several good sized lots were taken for delivery this month, and there is a fair degree of interest in later deliveries.

Old Metals.—The consuetive demand in this line, both for Scrap Iron and other Old Metals, has become quite large. Some considerable purchases of Scrap, Copper and Brass have been made during the week. One lot of about 1,000,000 pounds was bought by a large dealer in this city, of which 400,000 pounds has been taken for export to Liverpool and Italy. Stocks of Scrap Iron are becoming low, and holders who have been standing out for higher prices have been able to obtain the figures they demanded. Prices on Old Metals remain firm at last week's quotations, with an upward tendency. Wrought Scrap Iron fetches from 50c. to 75c. a ton more than a week ago.

The following quotations represent dealers' purchasing prices for moderate sized lots, New York City delivery:

Heavy Copper.....	lb 73¢	¢
Light and Tinned Copper.....	lb 71¢	¢
Heavy Brass.....	lb 5¢	¢
Light Brass.....	lb 4¢	¢
Lead.....	lb 3¢	¢
Tea Lead.....	lb 25¢	¢
Zinc.....	lb 9½¢	¢
No. 1 Pewter.....	lb 4½¢	¢
No. 2 Pewter.....	lb 4½¢	¢
Wrought Scrap Iron, gross ton.....	\$8.75	@ \$9.00
Heavy Cast Scrap..... gross ton.....	\$8.50	@ 9.00
Stove Plate Scrap, gross ton.....	\$8.00	@ 6.50
Burnt Iron..... gross ton.....	5.00	

Old Rags, Paper, &c.—The market is fairly brisk for Paper Stock of all kinds, and the outlook is regarded as promising. Prices, while not notably higher, are very firm. Dealers' purchasing prices, New York City delivery, rule about as follows:

No. 1 White Rags.....	lb 3	@ 3½¢
No. 2 White Rags.....	lb 2½	@ 2½¢
Mixed Rags.....	lb ½	@ 1¢
Blues and 3ds.....	lb 1	@ 1½¢
Hard Sized White Shavings.....	lb 2½	@ 2½¢
No. 1 White Book Shavings.....	lb 1½	@ 2½¢
No. 2 White Book Shavings.....	lb 1	@ 1½¢
Light Book Shavings.....	lb 1	@ 1½¢
No. 1 Mixed Shavings.....	lb ½	@ 1¢
No. 2 Mixed Shavings.....	lb ½	@ ¾¢
No. 1 Printed Books.....	lb 1	@ 1½¢
Ordinary Mixed Books.....	lb ½	@ ¾¢
Newspapers.....	lb ½	@ ¾¢
No. 1 Manila Paper.....	lb ½	@ 1¢
No. 2 Manila Paper.....	lb ½	@ ¾¢
Bogus Paper.....	lb ½	@ ¾¢
Common Paper.....	lb ½	@ ¾¢
Straw Chips.....	lb ¼	@ ¾¢
Binders' Clippings.....	lb 1½	@ 1½¢
Jute Butts.....	lb 1½	@ 1½¢
No. 1 Jute Bagging.....	lb ½	@ 1¢
Mixed Bagging.....	lb ½	@ ¾¢
No. 2 Bagging.....	lb ½	@ ¾¢
Hemp Twine.....	lb 2	@ 2½¢
Manila Rope.....	lb 2	@ 2½¢
Jute Rope.....	lb 1½	@ 1½¢
Mixed Rope.....	lb ½	@ ¾¢

Old Rubber.—The following quotations represent about the current prices paid by New York dealers:

Car Springs, ton lots, lb. 3	@ 3½¢
Rubber Shoes, carloads, delivered at factory, lb.	4½¢
Rubber Shoes, less than carloads, lb.	4½¢
White Wringer Rolls, lb.	3½¢
White Syringes, lb.	3½¢

Trade Notes.

THE WALKER LEAD COMPANY of St. Louis, Mo., with a capital stock of \$80,000, have recently filed articles of incorporation. The incorporators are I. N. Walker, A. B. Walker, H. A. Thompson and Earl Thompson.

A BIG TIN CAN FACTORY is to be started at Elwood, Ind., by Eastern capitalists. The plant is expected to be in operation this year.

THE WHITAKER BRASS FOUNDRY COMPANY, Kokomo Ind., are doubling the capacity of their plant and will put on an increased force of men.

IN another column D. R. McCallum, 69 Centre street, New York, calls attention to a desirable salesroom and warehouse space which he will share with a good steam specialty house. The location is right in the midst of the heating trade in New York City.

THE WELLS RUSTLESS IRON COMPANY's plant, about three miles from Hackensack, N. J., has been destroyed by fire and the damage will probably be nearly \$10,000.

THE SUTTON BRASS MFG. COMPANY of Buffalo, N. Y., have been licensed to incorporate. The president is Harry C. Green, and the directors are Edwin L. French, A. H. Plante, George Plante and J. W. Sutton.

THE NEW BRITAIN BRASS COMPANY, New Britain, Conn., have commenced work on their new factory.

THE CALIFORNIA WIRE CLOTH COMPANY, San Francisco, Cal., have been incorporated, with the following directors: A. S. Hallidie, Victor Engineer, Frank L. Brown, B. Seales, W. A. Grubb. The capital stock is \$25,000.

THE WIRE GOODS COMPANY, Worcester, Mass., are intending to materially enlarge their plant. The extension will probably double their present floor space.

F. A. TAYLOR has purchased the Straight Mfg. Company's Brass Works, at Kalamazoo, Mich., and will build a new plant.

New Publications.

MOTIVE POWERS AND THEIR PRACTICAL SELECTION, By Reginald Bolton. Size, 7½ x 5½ inches; 257 pages. Published by Loughmans, Green & Co, 1895. Price, \$2.25.

There has been a distinct advance made in recent years by engineering periodicals in considering the question of cost in connection with engineering work and the reasons, economic as well as structural, which determine the methods and forms used. Prices are quoted, and methods and designs discussed, not from a structural standpoint alone, but from considerations of first costs and earning capacity. Little of this spirit, however, has invaded the Engineering text-books and especially has this been lacking in the books on the steam engine and similar works in Mechanical Engineering. In the work before us the author gives full tables of cost of the different motive powers and necessary fittings which are remarkably close to the cost of good machinery in this country. In some cases his figures are a little higher than average prices here, as in the case of the prices given for horizontal return tubular boilers. They are on the safe side, however, and are about what would have to be paid where more than usual care is taken, by means of rigid specifications, to secure the best material possible. The discussion of the principles involved in the selection of the best form of motive power is most excellent; one cannot help wishing, however, that it had been made fuller and more thoroughly illustrated by means of examples. The Engineer in practice will find some rather serious errors and omissions, as for instance, on page 11 where the coal per minute per horsepower is given as from ½ pound with ordinary coal and machinery to ¾ pound for the best coal and machinery. The subject of the variation of efficiency of turbines at different gates seem to have been almost entirely overlooked. One cannot agree fully with the statement that the locomotive type of boiler is the best for burning wood when such excellent results are obtained with boilers set in brick. The following will seem strange to many Mechanical Engineers. "All rivet holes to be drilled, those in the shell to be drilled after the shell has been bent and bolted in position." But as a whole the book is one which no Engineer can afford to do without; for the young Engineer and in technical schools the book, if used as the author evidently intends it should be used, will be invaluable.

Dispatches from Russia indicate that the crops of Russian cereals promise remarkably well, and are almost equal to the large crops of 1890.

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THE METAL WORKER.

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The Sheet and Tin Plate Wage Scales.

As was generally expected the respective wage scales for sheet iron and for tin and black plate mills for the year ending June 30, 1896, has been arranged without difficulty, to the satisfaction of all parties concerned. The new sheet scale is based upon the average selling price of sheets, the minimum price being $2\frac{1}{2}$ cents per pound, instead of upon the price of bar iron, as under the old agreement. The workmen are to receive 2 per cent. of the increase in every 10 per cent. advance in the price. This settlement affects about 20,000 workmen. In the case of the tin and black plate workmen the new scale is similarly based upon the selling price of 100 pounds IC tin plate, instead of, as heretofore, upon the bar iron card. The skilled workers will be paid as a minimum the same wages as last season, but the scale does not touch unskilled tin mill labor, as it formerly did. Some 12,000 men are affected by this arrangement. The expectation seems to be general that a speedy advance in the prices of tin plates will occur, in consequence of the increased cost of bars and of the steel sheets rolled from them. Sheet iron has already advanced materially in price.

School Room Air.

This expression, so frequently employed as indicative of the atmospheric condition of unventilated school rooms, is seldom comprehended in the fullness of its meaning. School room air under such conditions is more than merely malodorous, more than close and oppressive; it is absolutely dangerous to the health of those who breathe it. In such a continuously occupied room with insufficient means for the renewal of air, the danger lies not in the abundance of carbonic acid gas produced by respiration, for this gas in itself, there is reason to believe, is neutral, so far as its effect on the

human system is concerned. But fortunately its presence, as determined by comparatively simple means, is an index of the relative proportion of other and injurious gases, as well as micro-organisms among which are to be found disease germs. As is well known, the presence of carbonic acid gas in excess of 8 parts in 10,000 parts of air creates a feeling of oppression and weariness on the part of those who are confined in such an atmosphere. But such a degree of contamination is as nothing when compared with the conditions as shown by expert tests in many schools. Where the ventilating system is found insufficient it is not uncommon to discover from 20 to 30 parts of carbonic acid gas in 10,000 parts of air, while in those buildings in which no provision has been made for ventilation the proportion has not infrequently been found to run as high as 50 parts. Certainly no one would wish to bathe in the water another has just used, nor take food from another's mouth, and yet this is substantially what is done in a poorly ventilated apartment. The air fouled and polluted by contact with the person and by respiration is passed on to the next in only a partially diluted state.

Disease Germs.

But it is far more than a matter of cleanliness; it is a matter of healthfulness. Critical study has shown beyond all question that injurious effects result from continued breathing of polluted air. The science of germ growth and the propagation of disease germs is now well understood. While such germs are practically lacking in the open air, they are found in increasing quantities as the air becomes polluted by the presence of human beings, as in inclosed apartments, and their effective action as conveyors of contagious diseases is well known. It must be evident that just so far as the germs given off from unhealthy bodies and distributed in the atmosphere may be the process of dilution be lessened in relative quantity per cubic foot of air breathed, to this degree may the dangers of contagion be likewise lessened. Ventilation can thus be clearly seen to be merely a process of dilution. Polluted water may be diluted to such a degree by the admixture of pure water as to be rendered harmless, and so may the air vitiated both by respiration and by the exhalations from the skin be so intermingled with fresh air as to lose its harmful effects. Lack of accurate and authentic records of the disastrous effects of poor and the beneficent results from good ventilation has had much to do with a failure to realize the conditions as they exist. The action of vitiated air is by no means immediate; its ef-

fect is slow but none the less sure. It does not, like a violent poison, bespeak its character and its harmfulness at once, but, like the sparkling but nevertheless tainted water, it saps the vitality of its victim. It is subtle, its effects are not readily traceable to their cause, but, notwithstanding, nothing is more certain than that improvement in school house ventilation will increase the bodily health and mental vigor of the pupils, will decrease the expense for substitute teachers and will to an appreciable degree reduce the time necessary to acquire an education. Time is money, in this instance, and it cannot be better expended than in the improvement of school house ventilation.

The General Society of Mechanics and Tradesmen of the city of New York has just issued its annual report for 1894, being the 110th year of its existence. The intimate connection of the society with the New York Trades School is well known, a number of its directors being on committees of that school. It maintains a number of free scholarships, in the New York Trades School, sixteen such scholarships having been awarded to pupils last year. Of these, six were for carpentry, four for plumbing, two for bricklaying, and one each for blacksmithing, stone cutting, house painting and fresco painting. The society itself maintains a free library, containing over 100,000 books; and its reading rooms are free to all respectable persons. That this privilege is appreciated is proved by the fact that during 1894 65,273 persons used the reading room. The schools and classes of the society give free instruction in mechanics, stenography and typewriting to men and women. It maintains also a course of lectures on scientific and popular subjects. Moreover, it affords pecuniary aid to, and cares for, widows and orphans of mechanics and tradesmen who are entitled to its assistance.

The decided improvement in crop news has tended to put backbone into every branch of business. The latest trade reports published by the commercial agencies are uniformly encouraging. Prices are advancing in all lines and larger forces are being employed in nearly every industry, while a number of concerns which have been long idle are making active preparations for early resumption.

Robert Speir Bussing, for many years senior member of the metal manufacturing firm of Bussing, Crocker & Dodge, Brooklyn, died on June 21, at his home, 20 Garden place, Brooklyn, at the age of 69 years.

THE LETTER BOX.

Tinning Black Iron.

From J. W. H., *Whittinsville, Mass.*—In further explanation of my letter, which was printed in *The Metal Worker* of June 15, I would say that my idea is to take common No. 16 R G sheet iron, cut it into pieces to form a 50-inch circle and tin it after it is cut. I would like to know what substance to use for tinning so as to get the best results.

Note.—Our correspondent has asked a rather difficult question. It would be possible, of course, to explain how sheet iron should be cleaned, pickled and tinned; but we would warn our correspondent that he is attempting a good deal of an undertaking. To merely tell him what acids to use in pickling, and to add that the tin must be melted and the cleaned iron dipped in it would give him very inadequate information. If he really wants to go into the tinning business it would be well for him to have his tinning pots and works put in operation by an expert; for it is practically impossible for him to start off with no knowledge of the business and acquire all the fine points of the art of tinning. It is delicate work and one who has not learned the business cannot make a success until he has spent a great deal of time and money in experimenting. The plant, furthermore, for the purpose our correspondent mentions, would cost a considerable amount of money, and we judge from his letter that he only wants to do tinning to a very limited amount. In that event it would be much cheaper to have the tinning done by some one already in the business.

Economizing Chimney Heat

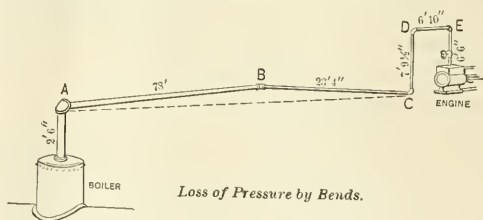
From M. N., *Pennsylvania.*—I wish to economize the chimney heat, or in other words save that which is ordinarily wasted, and propose to run a 7-inch smoke pipe up through the building and use old range boilers as heating drums on each floor, there being four floors in the building where I wish to use this device. Will such an arrangement interfere with the draft so as to prevent satisfactory operation of the stoves? Is a 7-inch round pipe equal to an 8 x 8 chimney flue for use in connection with stoves?

Note.—We shall be glad to have our readers express themselves in reference to this subject. It is a common custom to use a sheet iron heating drum in the chamber above the kitchen in country houses. These drums vary in size; but taking a drum 2 feet in diameter and 3 feet in height as an example, it would expose about 20 square feet of heating surface. The material of which it was made would facilitate the rapid transmission of the heat from the smoke to the apartment. When a good fire is burning in the stove in con-

nection with such a drum, they are very efficient as heaters. A 30-gallon boiler would expose a somewhat smaller amount of heating surface, and being made of very much heavier material would not transmit its heat so rapidly; and it is doubtful if placed in a room it would be as satisfactory as a drum of lighter material. If these drums, however, are placed in rooms on the same floor as and adjoining those in which the stoves are used, and the pipe connection is made in the 7-inch stack under each boiler, it is probable that a fair degree of efficiency would be attained in rooms of the average size. It is hardly probable that a 7-inch pipe would equal an 8 x 8 flue in draft capacity.

Loss of Pressure by Bends.

From C. A., *South Carolina.*—I send herewith a rough sketch of the way in which a boiler is connected



with an engine. The pipe rises from the boiler about 2 1/2 to 3 feet; then elbows off, shooting to the factory wall 78 feet away, then alongside the wall 2 1/2 feet; then rises 7 feet 9 1/2 inches; then through the wall and to a point over the steam chest of engine 6 feet 10 inches; then elbows down 6 feet 6 inches, to the steam chest. I wish to know if by swinging elbow A and C as indicated by the dotted lines there would not be a great saving of steam, fuel, &c., and if there is any way to compute about what saving there would be. As it is the steam has a great many angles to turn before it reaches the engine. The pipe from elbow A to C is on the same level. How would it do to raise the elbow A to a level with elbow D and shoot straight to the factory?

Answer.—The saving of steam in pipe transmission by the reduction of length and elbows is very important, and with exact data as to size of pipe and engine, its speed, point of cut-off and steam pressure, may be very closely computed the value of coal consumed for such waste. The amount of protection from felting the pipe and protecting the part exposed to the weather is also important in the assignment of values. All of these points are left out by our correspondent; hence we can only give an ap-

proximate value in length of pipe that will be saved by the suggested changes. The formula for an elbow is

$$1 + \frac{76}{\left(\frac{3.6}{\text{diam. of pipe}}\right)} =$$

loss in diameter in length of pipe. To clearly illustrate this, say, for a 4-inch

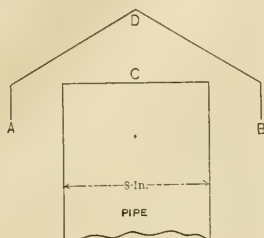
pipe; then $1 + \left(\frac{76}{\frac{3.6}{4}}\right) = 40$ diameters, and as 4 inches is $\frac{1}{3}$ foot $\frac{40}{3} = 13.3$ feet

of pipe will be saved or its equivalent loss of friction saved for each elbow that can be dispensed with. By changing the pipe to the diagonal position a saving equal to $19 + 13.3 = 32.3$ feet, and if the pipes are raised so as to do away with the second elbow, then $32.3 + 13.3 = 45.6$ feet of pipe, will represent the relative saving from the total friction surface of the steam pipe from the boiler to the engine. Then, counting

the total length of pipe and adding 13.3 feet for each elbow equals 192 feet, and $\frac{45.6}{192} = 23.7$ per cent. of the steam friction will be saved by shortening the pipe and leaving out two elbows. This as a percentage looks large, but it is only comparative, for if our correspondent should take an indicator card of the engine pressure and find 4 pounds less initial pressure upon the card than the boiler pressure, then the actual loss of initial piston pressure will be $0.237 \times 4 = 0.948$ pound, and if the engine is running at 80 pounds boiler pressure and the engine cuts off at $\frac{3}{8}$ the mean engine pressure will be 0.76 of the initial pressure, and $0.948 \times 0.76 = 0.72$ pound will be the mean engine pressure per square inch of piston. To carry the point to a value in horsepower we will have to assume an engine with a cylinder 14 inches diameter, 18 inches stroke, making 150 revolutions per minute. Then $\frac{153.9 \times 0.72 \times 450}{33,000} = 1.51$ horse-power lost in friction of extra length of steam pipe and elbows. If our correspondent is burning 6 pounds of coal per hour per horsepower 90 pounds of coal per day of ten hours will represent the coal loss.

Dimensions of Ventilators.

From J. H., New York.—Will *The Metal Worker* or some of its readers please give me some rule for obtaining the dimensions of the two ventilators of which sketches are inclosed. In Fig. 1 how large should the top A B be for an 8-inch pipe and how far from C to D; also, how far below the top of pipe C should the rim A B extend to keep out rain or snow. In Fig. 2 how large should the top be from A' to B' to keep out the weather



Dimensions of Ventilators.—Fig. 1.—Section of Ventilator with Rim.

and how much space from C' to E'. I would like to know if the pitch of top A' D' B' makes any difference.

Answer.—Some time ago we presented a side view of an Emerson ventilator which was supposed to have been drawn after the original design. Following that model, if the sides A B, Fig. 1, were used, the diameter could be twice that of the pipe, and it would be well to have the lower edge of rim A B on a line with or slightly below the top of pipe. This would give ample space between C and D. In Fig. 2 the diameter A' B' should be twice that of

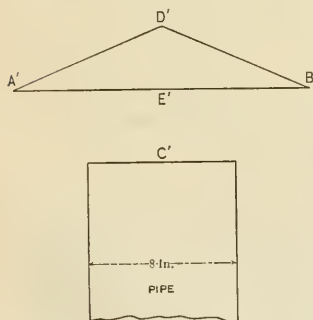


Fig. 2.—Section of Ventilator with Pitched Top.

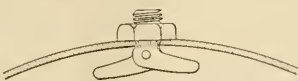
the pipe C' and from C' to E' one-half the diameter of pipe. We should be glad to have a further discussion of the subject by our readers.

Life of Steam and Hot Water Pipe.

From J. K., Norristown, Pa.—I should like to hear from the readers of *The Metal Worker* as to the relative life of piping used in connection with steam and hot water heating plants.

Riveting Iron Pipe.

From J. K. L., Weeping Water, Neb.—I notice in *The Metal Worker*, of May 25 a communication from "W. B." of Chicago giving his experience in riveting iron pipe joints, such as



Riveting Iron Pipe.—Fig. 1.—Fastener Attached to Pipe.

smoke pipes are generally made with. If he and others interested will, however, use the split bolt pipe fastener shown in the accompanying illustrations, I think they will find it much more convenient than the ordinary



Fig. 2.—Fastener Opened.

rivet, as it can be inserted from the outside of the pipe or any other hollow work, such as galvanized iron cornice, cylinders or drums, by punching or drilling the holes, or in light work by making the holes with an ordinary



Fig. 3.—Fastener Closed.

scratch awl. Fig. 1 shows the fastener attached to two joints of pipe, Figs. 2 and 3 are two views of the fastener attached, while Fig. 4 is an ordinary nut that goes on the shank of the fastener. The fastener can be



Fig. 4.—Nut for Securing Fastener.

taken out by removing the nut, which admits of its being used over and over again.

Tarred Paper Under Roofing Tin.

From Roofer, Milwaukee.—Referring to the letter from "A. S.," Paris, Ill., in *The Metal Worker*, June 15, it seems to me that as coal tar is injurious to tin it must be evident that paper or felt saturated with coal tar would injure the tin placed over it. Some roofers consider ordinary building paper the proper material to place under tin, as it has a tendency to prevent condensation, yet in case there should be a leak in the roof will allow the water to soak through. Others prefer a paper saturated with rosin, which makes it water proof and would prevent the moisture from below from reaching the tin. Whenever rosin paper is used under a tin roof it should be laid so the water will run against the lap. This can be done by laying the first sheet at the eaves, then slipping the edge of the second sheet under the first, and so on. When the paper is laid in this manner any water which may enter through a leak will not flow the length of the roof between the tin and paper, but will drip out at the

first lap. A felting or paper that does not contain anything injurious to tin, is also water proof and a non-conductor of heat, would be a desirable article to place between the sheathing boards and the tin of a roof, thus preventing condensation.

From N. H. & C. W., New Haven, Ky.—In reply to "A. S.," Paris, Ill., whose inquiry appears in *The Metal Worker*, June 15, we would say that our experience with tarred paper under tin has not given the satisfactory results we looked for, so we now use for roofs over steam boilers, flour mills, &c., a water proof paper with paper above the tar, if any tar is used. For plain roofs, any common roofing paper will give satisfaction.

Who Should Make the Connections?

From E. M., New York.—I notice the inquiry of "X.," in *The Metal Worker* of June 22, as to who should make the connection between the water back and the horizontal boiler when these two articles are furnished by range contractors to the builder. A change of custom was inaugurated with the advent of the horizontal boiler in this market. The plumber in the past always made the boiler connections and continues to do so when an upright boiler is used. It has, however, grown to be an almost universal custom for the dealer who furnishes the range to adjust the pipes which connect the water back with the horizontal boiler. This custom is so strong that both the range dealer and the builder look upon the making of this connection as a part of the range dealer's contract.

Sheet Zinc for Eave Troughs and Conductors.

From C. N., Milwaukee.—Judging from the letter of "N. K. W.," in *The Metal Worker*, June 8, Stoneboro must have a large amount of sulphur in the air if tin or galvanized iron eave troughs and conductors will only last about two years. If the best roofing tin or galvanized iron were used, and the articles were kept well painted, it would seem that they should last much longer than the time mentioned. It is well known that sheet tin or galvanized iron have only a thin coating of metal, and if there is enough sulphur in the air to destroy this coating the iron or steel will last but a short time. It is claimed for iron roofs that they are durable, but it is supposed they are to be kept well painted so as to protect the iron from the action of the air or "smoke." Why should not tin, galvanized iron or zinc have the same protection where sulphur abounds?

Asphalt Floors.

From NEW HAVEN TIN, SHEET IRON & COPPER WORKS, New Haven, Ky.—Can you inform us how to lay an asphalt floor? We contemplate using an asphalt floor in our new store and shop and would like to know from actual experience if such a floor would give as satisfactory results as a wooden floor; also, how much would it cost per 100 square feet? Our object in using it is to make the buildings more nearly fire proof, as insurance rates are so high here.

Note.—We should be glad to have our readers furnish information on this topic. We understand that asphalt floors are excellent, but the general objection is the expense. We can, unfortunately, give no definite information on this point and should be much pleased if our readers could furnish it.

ROOFING AND CORNICE.

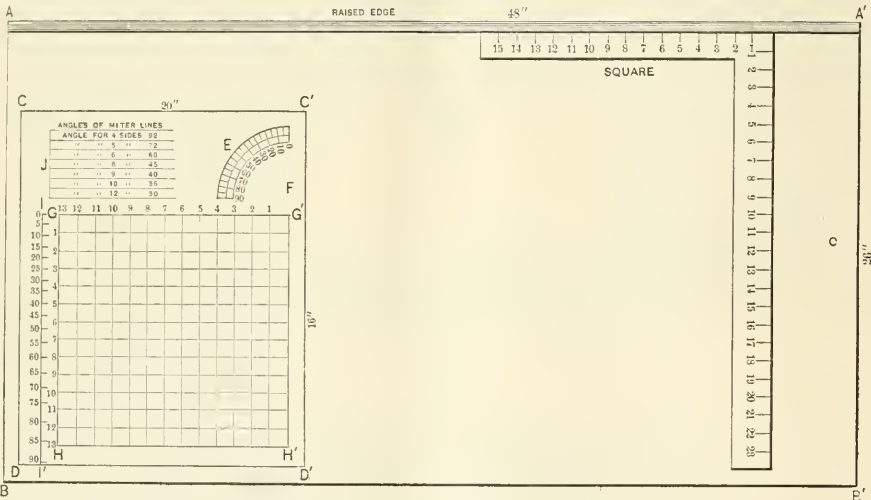
The Hang Up Drawing Board with Profile Slate.

A. L. Burtis, Lockport, N. Y., furnishes us the particulars of the application of his copyrighted elbow chart to the obtaining of miter patterns, which is intended to accomplish by a short and easy method the developing of miter patterns for every day shop use. This slate chart, with its useful scales of degrees, enables one to find the degree or angle wanted, and to draw the miter line instantly across the profile marked on the slate for any miter he may wish a pattern for, which is one important advantage over the usual method, and results, it is pointed out, in a great saving of time. Perhaps, in a shop where they have all the facilities

crosses the protractor E will indicate the proper degree, and on the vertical scale the mark to draw the line to. A line drawn from G' to a similar number or degree in the vertical scale I I' will give the corresponding miter line.

In Fig. 2 is presented the usual method for obtaining the pattern for an article that is a regular polygon in plan. The elevation is drawn above the plan, and lines dropped from the profile across the miter lines in plan, and from the points thus obtained lines are carried cutting the usual measuring lines drawn through the stretchout line. By the use of the slate shown in Fig. 1 the miter line can be obtained without drawing the plan or elevation. In Fig. 3 is shown the perspective view of a chimney top, which is a regular

tabulating points to place on the stretchout line. Thus on *lk* in Fig. 6 lay off a stretchout of the points in the profile K L, as indicated by the small figures. The paper being placed on the board, *lk* would be drawn parallel with the raised edge A A', which serves as a guide for the square in drawing the usual measuring lines. The measuring lines are then drawn, and the lengths of lines from G G', passing through the points in the profile K L to the miter line N O, transferred to lines of similar number drawn from the stretchout line *lk*. Thus the line corresponding to point 1 of profile is $6\frac{1}{2}$ inches long; the line corresponding to point 2 of profile is $6\frac{1}{2}$ inches, &c. Through the points thus obtained in the measuring lines trace a curved



The Hang Up Drawing Board with Profile Slate.—Fig. 1.—General View.

for drawing, this method might not be considered of so much value, but it is contended that very few shops are so provided, and this new system is intended for their benefit.

In Fig. 1, A A' B B' represents the board, which is 26 x 48 inches. C C' D D' is a slate, 16 x 20 inches, let in near the left hand end, and flush with the surface of the board. G G' H H' of slate is divided into inches and eighths, for obtaining the lengths of measuring lines. At E is placed a protractor for obtaining angles, and at I I' a corresponding vertical scale of degrees. The table of degrees at J, for producing polygons, is very useful, as it gives the right degree by which the miter line may be drawn from G' to the vertical scale I I', to form the desired shape for any molding, as an octagon, or ball in any number of pieces up to 12. The miter line for a round, elliptical or square elbow, of any number of pieces, can also be drawn. To ascertain the miter line for any other angle, place the bevel with one blade on G' H', the crotch being at point F, and where the other blade of the bevel

polygon in plan, and the patterns will be obtained for the top part K L and the base L M. In Fig. 4 is presented a partial elevation of the top, showing the profiles of K L and L M. When it is desired to obtain the pattern for an article having mitered corners, the profile of which is formed of curved or straight lines, it is best to cut a profile out of tin, which is of use to form the work by, and from that the profile may be drawn on the slate, as shown by K L and L M of Fig. 5, where a portion of the slate is shown larger than in Fig. 1. Then ascertain what the angle of the miter line is by the protractor. If for a square, or article having four sides, table J shows the miter line to be 90 degrees, or a line drawn from G' to I'. As this line would not be convenient to use in connection with the profiles in Fig. 5, lines can be drawn parallel to it, as shown by N O and N' O'. The patterns shown in Figs. 6 and 7 are obtained as if the paper was secured on the board at the right of the slate.

Then to obtain the pattern for K L of Fig. 5, space off the curved line, es-

line, as shown by I' K', thus completing the pattern. The pattern for base L' M' of Fig. 5 is obtained in a similar manner. On *lm* in Fig. 7 lay off a stretchout of L' M' of profile, as shown by the small figures in *lm*, and through the points thus obtained draw the usual measuring lines. Transfer the lengths of lines from G G' to miter line N' O' that pass through the points in profile L' M' to similar lines drawn from *lm* of Fig. 7. Lines traced through these points of intersection, as shown by *lm'*, will complete the pattern.

In Fig. 8, let T U U' represent the half profile of a ball which is to be made in 12 pieces. Also let R S R' S' represent a portion of the slate on which the profile is drawn. Referring to table J in Fig. 1, we see that the angle for the miter line for an article of 12 sides is 30 degrees. Accordingly the miter line would be drawn from G' to 30 in the vertical scale I I'. This line is shown in Fig. 8 by Q P. Then divide U T of profile into any convenient number of parts, as indicated by the small figures. On

ut of Fig. 9 lay off a stretchout of U T, and draw the usual measuring lines. Take the lengths of lines between R S and P Q that pass through points in the profile U T, and transfer to lines of similar number drawn from u t, and through the points thus obtained trace a line, as shown by c b. From the point b draw b a, parallel with t u, and make a d equal to a c. Using c b as a pattern, mark d b. Or, measuring in each instance from a b, make the points in a d b equal to those on similar lines in a c b. Then d b c is the half pattern for a ball of 12

sired miter line. Accordingly a line drawn from G' to 45 on I I would give this miter line. This line is shown in Fig. 10 by X W. Then divide the profile Y Z into any convenient number of parts, and on y z in Fig. 11 lay out a stretchout of profile Y Z, as shown by the small figures. Through the points in y z draw the usual measuring lines. As in the previous instance, take the length of lines between V W and X W that pass through points in the profile Y Z, and transfer to lines of similar number drawn from y z. Through the points thus obtained trace

FLASHINGS.

THE Illinois Roofing Supply Company, 203 Lake street, Chicago, Ill., issue a handsomely colored official price list under date of June 15, 1895. The folder is printed in blue and red, making a very striking effect, and on the front page is a picture of a cottage covered with Perfection lock seam steel roofing. The two inner pages quote prices on sheet metals, roofing plates, bright plates, eave troughs, conductor pipes, roofing, siding, &c.

THE Berger Mfg. Company, Canton, Ohio, issue a supplement to their architectural sheet metal catalogue, which is a handsome pamphlet measuring 15 x 12 inches in size and bound in tinted paper. The pages, which are numbered from 65 to 90, relate to cornices, urns, finials, hip caps, dome finials, dormers, ornamental ridging, artistic ridge and hip moldings, hip molding terminals, cresting blocks, letters and figures, druggists' sign mortars, spun balusters, gable ornaments, &c. The size of the pamphlet enables large illustrations to be used, which present the sheet metal articles with exceptional clearness, showing all the details of ornamentation, &c. With the illustrations are particulars of sizes, &c.; also numbers for ordering. The letters and figures shown in two styles are made in various sizes from 6 to 12 inches.

THE Roanoke Roofing & Metal Cornice Company, Roanoke, Va., have secured the contract for furnishing the galvanized iron work in the Masonic Temple, which is being erected at Bedford City, Va. They also are doing the sheet metal work for store buildings at Charlottesville, Va.

C. H. LUM, New Haven, Conn., says the *Commercial Record*, has secured the contract for the slate roof on the new car house of the New Haven Street Railway Company. Mr. Lum has contracts for slating a number of houses, and has recently ordered six carloads of slate. He has fitted up a factory and office at West Haven, which will be connected by telephone, and where he will manufacture and ship his roofing cement and sheathing papers.

GEORGE A. OHL of George A. Ohl & Co., Newark, N. J., sailed for Germany last Wednesday, to be gone three months. It is some time since Mr. Ohl visited the Fatherland, and all will join us in wishing that his trip will be full of rest and pleasure.

W. H. RANKIN, 91 Maiden lane, New York, issues a small 16-page illustrated pamphlet descriptive of his brand of patent painted felt for sheathing slate, shingle or tin roofs; also patent painted roofing, Empire sheathing and other specialties in roofing materials manufactured at his factory, at Elizabeth, N. J. The pamphlet also contains extensive directions for applying the felt and tarred roofing. Mr. Rankin reports a very satisfactory volume of business in his line since the opening of the year. His factory is now busy on the manufacture of stock for the fall trade, the outlook for which he considers to be remarkably favorable.

A TASTEFUL little booklet with the title "Enamelled Leather Sheathing" is issued by the Mica Roofing Company, 73 Maiden lane, New York. Its contents refer to the enamelled leather sheathing manufactured by the firm, which is described as a strong paper, enamelled in imitation of leather, for building purposes, rosin sized and water proof. The sheathing is claimed to offer an absolute protection from dampness and drafts,

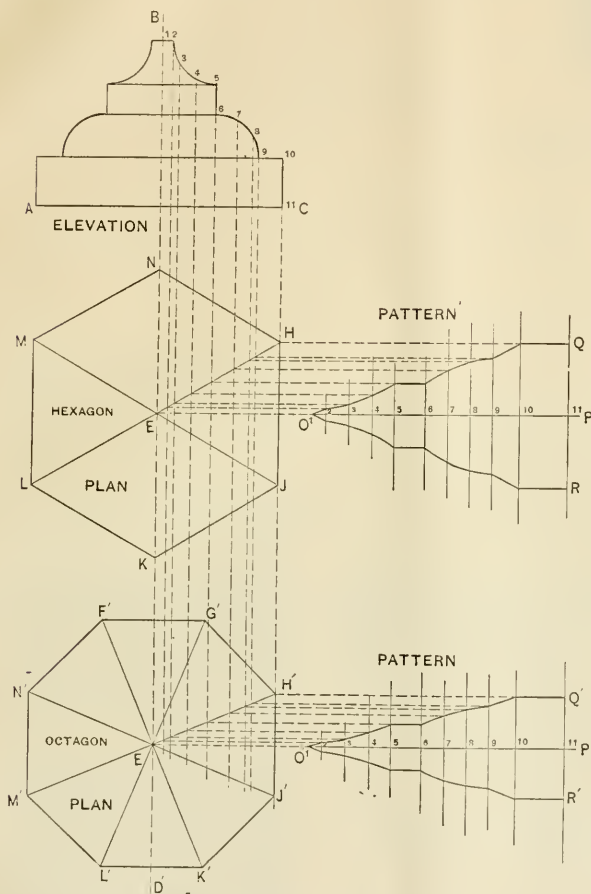


Fig. 2.—Usual Method for Obtaining the Pattern of an Article that is Regular Polygon in Plan.

pieces. To obtain the miter line for an elbow of any angle, divide the number of degrees by one less than the number of pieces in the elbow. Then a four-piece elbow of 90 degrees would require three angles of 30 degrees each. As P Q represents a 30-degree angle in Fig. 1, c b of Fig. 9 represents one-fourth of the full pattern for a four-piece elbow of the diameter indicated by T U', which is 5 inches.

In Fig. 10, V W V' W' represents a portion of the slate, upon which is drawn the profile of an ogee, as shown by Y Z. If it were desired to obtain the pattern for an octagon angle, or article of eight sides, table J in Fig. 1 would indicate that 45 degrees in the vertical scale I I' would give the de-

a line, as shown by y' z', thus completing the pattern.

An advantage claimed for this system is that the same process obtains the pattern for all shapes and angles, thus simplifying the operation and leaving less to be remembered by the student or workman. Many may think the slate is too small, but it is large enough to accommodate almost any single member of an ordinary cornice or base. For a face or gable miter the profile would be placed the other way on the slate.

JOSEPH MARQUARDT has recently begun the cornice and roofing business at 149 Avenue A, New York City.

Among its recommendations is the fact that it will not mildew or decay, but will last as long as the build- phlet advertising the merits of their Medal brand of wire edge ready roofing, made of three layers of the best

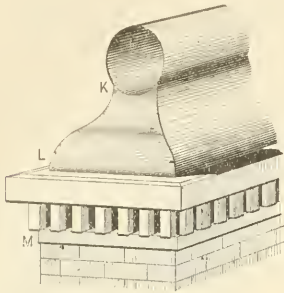


Fig. 3.—Perspective View of Chimney Top for which Patterns are Required.

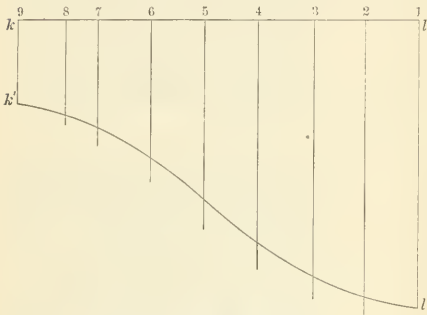


Fig. 6.—Pattern for Top.

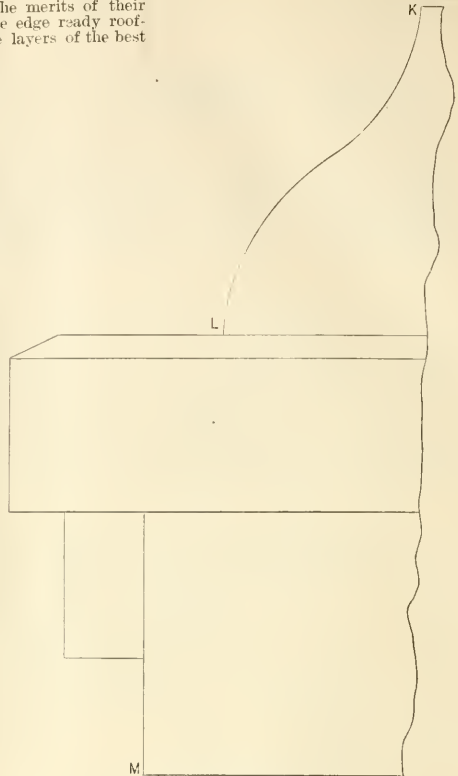


Fig. 4.—Partial Elevation of Chimney Top.

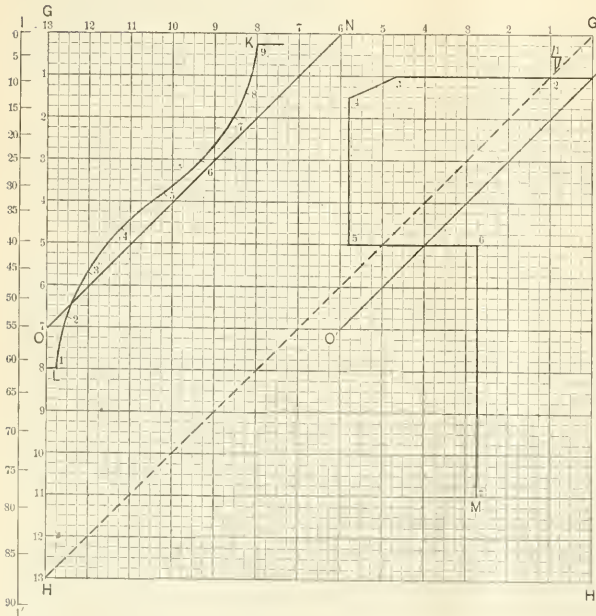


Fig. 5.—Profiles Drawn on Slate Reduced in Size.

the water proof layer, are placed wires which give the material great strength and which form a lock joint or secure fastening at the laps, affording security against wind pressure. The Mica Roofing Company's factories in Brooklyn, N. Y., and Indianapolis, Ind., are reported to be running to their fullest capacity in order to fill the increasing volume of orders received during the past two months.

Two attractive illustrated pamphlets issued by the Childs Mfg. Company, 95 William street, New York, call attention respectively to the Childs water proof sheathing and building papers and the Childs preservative paints and insulating electrical compounds. Special mention is made in the first named pamphlet of the Safety lining paper, lined with asphalt, which is claimed to make a perfectly water proof article of great toughness and strength and practically indestructible. Childs preservative paints are described as being water, acid and alkali proof, and are recommended as preserving wood, brick, cement and iron from the action of these elements.

The New York World has printed a list of advances in wages in the last 30 days, showing that about 250,000 workmen have had increases ranging from 10 to 30 per cent.

At a special trial of a new electric motor, on the Nantasket branch of the New Haven Railroad last week, a speed of 80 miles an hour is reported to have been easily obtained. A hot box was all that prevented the making of a still higher rate of speed.

ing on which it is placed. The Mica Roofing Company also distribute an attractively gotten up 24-page pamphlet advertising the merits of their quality tarred felt, combined with two layers of water proof composition. In the edges of the roofing, imbedded in

**A Long Pull, A Strong Pull and
A Pull All Together.**

BY FOSSIL.

I have read that there are "sermons in stones and books in the running brooks," and as I sit surrounded by the "stones" which are indigenous to this section, with a river near answering for the "brooks," I will try to find

tend may say, "It is not in mortals to command success; but we'll do more, we'll deserve it," and in case of defeat they will endeavor to find out what errors they have made, and, if possible, improve former action.

Probably there are few who enter upon a business career without the intention of continuing it, unmarried females excepted; therefore "a long pull" is expected in the outset. A "strong pull" is also admitted to be

not a mere cog in the business wheel, but entitled, if worthy, to the care and consideration of the wage payer. Time was, before the words master and apprentice had fallen into desuetude, that a boy who set out to learn a trade would have a like attention given to his moral and physical welfare by his employer to that which he had presumably received from his parents. Likewise there was a time when such a boy felt bound to reciprocate by caring for

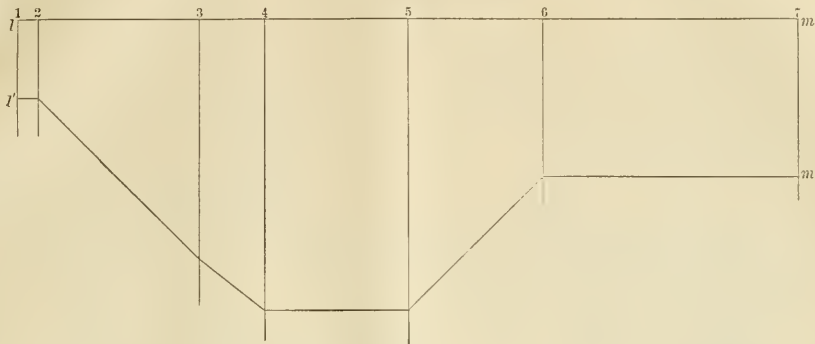


Fig. 7.—Pattern for Base

at least a text for this fossilized essay. By and by our river will be full of motor-craft propelled by all manner of motors, and full of gazing people, some of whom may perhaps be also "full," decorated from stem to stern—the vessels, not the people—with an eruption of bunting in which the blue of Yale and the scarlet of Harvard will be prominent. There will be a time of great expense, also, of by no means hushed suspense, as the rival crews pass "Mamackoe Point;" everybody asking everybody else—since the boats carry no sign of identity known to the general public—what college is leading. Down between the columns of steamers, yachts and other floatants they will go, reaching the goal amid the waving of flags, the booming of cannon and the shouts of the multitude. The race from start to finish is over in about twenty minutes, then the river is soon deserted by the contestants and spectators, and "silence like a poultice comes to heal the blows of sound."

Perhaps this is enough of a "pull" to moralize on, but there is more to follow. There was no one seen sculling occasionally but I suppose are practice pulls, or rehearsals, on the river. I watch—without caring who will "get there" on regatta day—the steady uniform sweep of the oars, the rhythmic motion of the rowers' bodies, the undeviating course and the apparent indifference to all sights and sounds except the voice of the "coach," who, from the accompanying launch, sometimes criticises forcibly.

Then I think, here is an aquatic sermon which ought to be reported for the possible improvement of possible readers. It teaches the value of individual attention to the business in hand; the need of combined and accordant effort to accomplish a result which is hoped for with a common desire; the submission for the general good of personal independence; to the direction of authority which holds power through the will of the subjects. "A long pull!" persistent effort. "A strong pull!" earnest effort. "A pull all together," combined effort. These qualities, which are necessary alike in athletic contests and business enterprises, may not always bring victory, but those who manfully con-

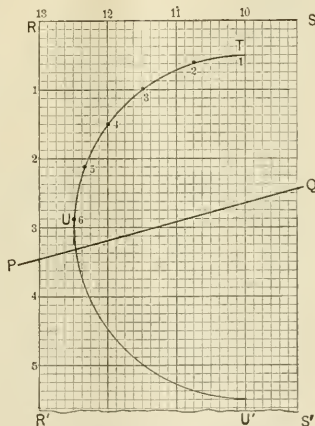


Fig. 8—Profile of Ball in 12 Pieces.—Dimensions on Slate are One-Half Size.

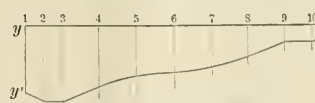


Fig. 11 — Pattern for Ogee.

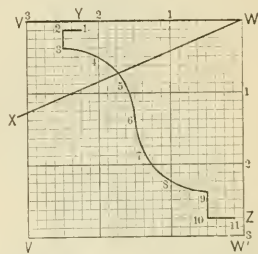


Fig. 10.—Profile of Ogee, Octagon
in Plan.

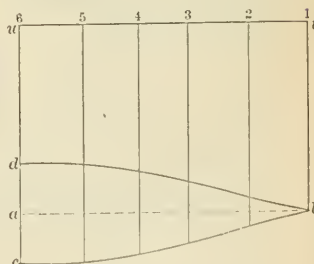


Fig. 9.—Half Pattern for Ball.

very necessary in these days of competition. And this brings me to the point which I intended to reach with less words.

"A pull all together," it seems to me, is getting rather out of fashion in the case of employers and employees. For some reason they don't seem to be in the same boat, or at least they appear to use their "sculls" for contrary purposes. There was a time, when some other fossils may remember, when the workman—especially the apprentice—was

the master's interests equally with his own. If that kind of masters and apprentices were not extinct, we might expect a better agreement between capital and labor than now too often obtains.

The Keystone Pottery, owned and operated by Miller Bros., at Rochester, Pa., was destroyed by fire of unknown origin, on June 25. The plant was valued at \$50,000 and carried an insurance of \$30,000.

TIN PLATES.

The Tin Plate Scale Arranged.

After a three days' session in Pittsburgh last week the Conference Committee of the Iron and Steel Sheet Manufacturers' Association and the Amalgamated Association arranged a scale governing sheet and tin plate mills for the year ending June 30, 1896.

The tin and black plate mills scale, formerly based on the bar iron card, has been changed and is now based on the selling price of tin plate, as follows:

Base of Tin Plate Scale.

When 100 pounds 1C tin plate is selling at a ratio of one-fourth the price per ton of 2240 pounds of 4 x 4 steel billets, the wages list as in agreed scale shall prevail, but in case of a departure in either the selling price of steel billets or tin plate that will change the above ratio \$2 per ton, or more, then the wages list shall advance two per cent. for each \$2 from said ratio and decline two per cent. for each \$2 decline to said ratio, but in no event shall wages go below present list during the year beginning July 1, 1895, and ending June 30, 1896.

Gauge Nos.	Rolling steel 2240 lbs.	Doubling.	Heat-ing.	Shearing on jaw or crocodile shears, and job work on squaring shears.
8 to 11	\$2.04	\$0.93	\$0.85	
12, 14...	2.13	.96	.90	\$0.99
15, 17...	2.45	1.10	1.07	
16, 17...	3.24	1.46	1.32	
18 to 20	3.62	1.63	1.48	1.59
21 to 24	4.07	1.85	1.63	
25, 26...	4.57	2.07	1.88	
27, 28...	4.63	2.21	2.05	1.71
29, 30...	5.39	2.70	2.48	1.76
31...	5.40	2.84	2.66	1.78
32...	5.65	2.97	2.79	1.88
33...	5.99	3.13	2.88	1.98
34...	6.64	3.33	3.15	2.20
35...	6.97	3.32	3.34	2.30
36...	7.43	3.60	3.46	2.46
37...	7.62	3.65	3.52	2.49
38...	7.60	3.72	3.58	2.52

Black Plate Used for Tinning Only.

21 to 24	\$3.96	\$1.86	\$1.63	
25, 26...	4.00	1.86	1.69	\$1.52
27, 28...	4.41	1.96	1.82	
29, 30...	4.50	2.36	2.17	1.54
31...	4.59	2.48	2.34	1.65
32...	4.80	2.60	2.44	1.73
33...	5.06	2.74	2.62	1.73
34...	5.64	2.91	2.76	1.93
35...	5.92	3.08	2.92	2.01
36...	6.32	3.15	3.06	2.15
37...	6.39	3.19	3.08	2.18
38...	6.46	3.26	3.13	2.21

1. Thirteen per cent. less than at prices for iron, except shearmen.

2. Shearmen on modern squaring shears on twenty-five gauge and lighter to receive 87½ cents per turn. This clause only applies for shearing tin plate.

EXTRAS.

3. Twenty per cent. added for changed steel and twenty per cent. on net price of iron.

4. Seventeen per cent. added for pickle finished iron and steel, except shearmen.

5. For all sheets sheared into circles on tin and black plate mills where the loss exceeds ten per cent., twenty per cent. extra shall be paid.

6. That all sheets cut down to smaller sizes on tin and black plate mills be paid for at scale prices.

7. All sheets rolled on tin mills over fourteen square feet shall be paid for at sheet mill prices.

8. Where improved squaring shears are used, the company shall pay for grinding the knives.

9. Catchers on tin and black plate mills to receive twenty-three per cent. of roller's statement.

10. Eight hours shall be a day's work on tin and black plate mills.

OUTPUT.

The limit of a turn's work of eight hours shall be as follows:

On Gauge Nos.	100 pounds.
24	6,650
25	6,250
26	5,850
27	5,650
28	5,150
29	5,350
30	5,250
31	5,050
32	4,850
33	4,650
34	4,450

Where 28 gauge is worked, matched, 8 sheets to the pack, 5650 pounds shall be the limit.

Scale of Prices for Morewood Stacks.

	Tin-nng.	Wash-ing.	Catch-ing.
	Cents.	Cents.	Cents.
Coke	11	11	3½
Best coke	12	12	4
Charcoal	12	12	4
Double rolling	14	14	4
Heavy coating	12	12	4
Old style	15	15	4

Standard.—A box of 14 x 20 containing 112 sheets = 31,360 square inches to be the standard.

All boxes weighing over 136 pounds to be paid for as over weight.

In the above scale of prices for Morewood stacks prices for assorting were not finally agreed upon, but will be arranged by Mr. Jarrett for the manufacturers and Mr. Garland for the Amalgamated Association. After the scale governing sheet mills had been arranged, it was signed in conference by J. G. Battelle, president, and John Jarrett, secretary, for the firms belonging to the Iron and Steel Sheet Manufacturers' Association and is binding on them. The tin plate scale was signed in conference by W. T. Graham, president, and John Jarrett, secretary, and is binding on the members of the Tinned Plate Manufacturers' Association of the United States. The first tin plate concern, not a member of the above organization, to sign the tin plate scale was the Monongahela Tin Plate Company of Pittsburgh, who signed on Monday morning, the 24th inst. Other concerns are expected to sign within a few days.

Opinions of a Welsh-American Tin Plate Maker.

J. H. Rogers, managing partner of E. Morewood & Co., Llanelly, South Wales, and Gas City, Ind., who has recently returned to Wales from a visit to this country, was interviewed on arrival by a reporter of the *South Wales Daily News* in regard to the condition of the tin plate trade in America. Being asked whether the Welsh trade with the United States was falling off to the extent that was generally believed, Mr. Rogers replied that that was not his opinion. He considered it premature to say that any serious injury had so far been done to the tin plate trade in Wales by the progress of the industry in the United States. He also stated that

the report that sufficient plants had been laid down in America to meet all the wants of this country has been enormously exaggerated. Being asked by the reporter if he believed that Wales still had a firm hold on the American trade, Mr. Rogers diplomatically replied that he was of the opinion that "the larger portion of tin plates consumed in America come from Wales." How long this condition of affairs is likely to continue, however, he could not say. His attention being directed to the policy now being adopted by the Welsh tin plate workers for the restoration of the 1874 wage list, Mr. Rogers declared that that policy would be very difficult to realize; adding: "Every increase in the cost here makes it more easy for America to compete with Wales, as, so far, the make in the States is not nearly so large as their own consumption. The higher the cost here the more rapidly will the trade leave this country."

In regard to the question of new markets for the Welsh product Mr. Rogers said that he did not anticipate a material increase in the Welsh trade with the European continent, as the continental countries are becoming large makers of tin plates on their own account. The South American States, he thought, were likely to offer the best field for the Welsh tin plate manufacturers in the future, as they are becoming great farming and meat producing countries. The Japanese, he thought, are much more likely to manufacture tin plates than to consume them. Being asked for his views on the outlook for the Welsh trade, Mr. Rogers concluded as follows: "I consider the outlook better than it has been for the last two or three years, and I think that Wales will for a long time continue to be a large tin plate manufacturing district, especially as everybody seems to be working away at reducing the cost of production, and it is only by reducing the cost of production that we can hope to compete with other nations, and encourage the use of tin plate for the purposes in respect of which glass, wood and cardboard are at present employed. For instance, there can be no doubt that tin plates will this summer be used by many American establishments for canning fruit, instead of glass bottles, as the price of tin plates has been reduced, while the price of glass has risen. Furthermore, there appears to be a revival in trade all the world over, a revival by which England has so far been least affected. Every country in the world consumes tin plates, and as for America making all she requires for her own consumption, it is quite incorrect."

The new rolling mill of the Struthers Iron & Steel Company, Struthers, Ohio, was put in full operation last week. Since its acquisition by the present management, the plant has been completely overhauled, and new and improved machinery installed, a large annealing house and warehouse having also been erected. The works are said to have begun operations with sufficient orders to keep them busy until the fall. Another sheet mill will be put down before the close of the year.

SCRAP.

A NEW MILL has recently been completed by the Junction Iron & Steel Company, Mingo Junction, Ohio, for the manufacture of tin plate bars. The mill will have a capacity of 200 tons of soft steel bars a day.

LA BELLE IRON WORKS, Wheeling, W. Va., have contracted with the H. S. Sands Electrical Mfg. Company for the installation of an electric light and power plant in their newly completed tin plate works.

W. H. DONNER, manager of the National Tin Plate Works, Anderson, Ind., states that a test will be made of the new plant about July 15, when four of the mills will be ready for operation. The entire plant is expected to be at work by August 1.

NECESSARY repairs which have recently been carried out at the plant of the American Tin Plate Company, Elwood, Ind., have been completed; and the plant started into full operation on Monday, with the new rolls in the cold roll department.

THE mill of the Crescent Sheet & Tin Plate Company, Cleveland, Ohio, is now in full operation, so far as regards the black plate department. Four mills are running full time, together with the pickling, annealing and cold roll departments; and everything is reported to be working very satisfactorily. The firm do not propose equipping their tinning department for the present.

SHIPMENTS of black plates for tinning from Great Britain to the United States in the month of May, according to the Board of Trade returns, amounted to 300 tons, as compared with 1180 tons in April. The total shipments of black plates to this country during the first five months of the current year have been 4247 tons.

THE agreement which has been come to between the management and the workmen at the Dyffryn Tin Plate Works, Morriston, South Wales, involves a reduction of wages equal to 23½ per cent. Similar terms have been conceded by the men at the Landore Tin Plate Company's works, Swansea.

THE illustrated *Greater Cleveland* of June 15 contains portraits of President H. B. McIntosh, Secretary and Treasurer J. A. Mathews and Superintendent James Paton of the Crescent Sheet & Tin Plate Company, Cleveland, together with a description of the company's new and extensive plant, details regarding which have already been given to our readers.

THE Monongahela Tin Plate Company, Pittsburgh, Pa., have signed the Amalgamated Association wage scale for the season of 1895-1896, for their employees. The company are not connected with the Tinned Plate Manufacturers' Association, and their works were not included in the settlement made between the wage committees of the two associations last Saturday.

At a meeting of citizens interested in the projected new suburb of Connelville, Pa., George J. Humbert of Norristown, Pa., presented full details regarding the new tin plate works which the Connelville Extension Company propose to erect under his superintendence. The plant will consist of a four-mill tin plate works, modern and complete in every particular, to be erected at South Connelville, at a cost of not less than \$150,000. The buildings will be fire proof, of iron or brick and stone. The dimensions of the buildings will be about as follows: One iron building, 100 x 165 feet; one brick or stone building, 40 x 200 feet; one

iron building, 45 x 80 feet; one iron building, 60 x 100 feet. The work on this plant is to be commenced immediately on the signing of the agreement, whereby the people of Connelville and vicinity agree to purchase \$130,000 worth of lots in the new section. It is understood that these lots have nearly all been subscribed for, and the early prosecution of the enterprise is believed to be assured.

It is expected that the workmen at the Western Tin Plate Works, Llanelly, South Wales, will stand out for the restoration of the 1874 wage scale at the close of the present month. This decision they have communicated to the management as being final, and it is thought that the works will be closed in consequence. The men have hitherto been working on a reduction of 12½ per cent. on the 1874 list.

THE DEATH is ANNOUNCED of David Samuel of Llanelly, South Wales, a director of the Ashburnham Tin Plate Works, and in other ways extensively interested in the Welsh tin plate trade.

THE Baltimore Iron, Steel & Tin Plate Company's reconstructed tin plate plant at Locust Point, Baltimore, consisting of four black plate mills and four tinning sets, is in full operation. The company are turning out a high grade of charcoal, coke and terne plates, one brand of each description, namely, "Oriole," charcoal bright; "Locust," coke bright, and "Violet," terne.

A NEAT little folder in "dark green and gold, issued by the Aliquippa Tin Plate Company, Pittsburgh, Pa., advertises the brands of bright coke and terne plates manufactured by the firm. Special attention is called to their "Re-roll New Style" brand of high grade roofing plate, produced by a new process, for which a patent has been applied for. By this process it is claimed that an absolutely equal weight of coating is imparted to the entire surface of the plate. The Aliquippa Tin Plate Company's works, located at Aliquippa, Pa., consisting of one black plate mill and two tinning sets, give an average daily output of 60 boxes. The company's office address is 422 Telephone Building, Pittsburgh.

ACTIVE PROGRESS is being made in the building and equipment of the plant of the Star Tin Plate Company, at the foot of Twelfth street, Pittsburgh, Pa. It is expected that the works will be ready for operation in the latter part of August. The plant will include eight hot and nine cold mills, with a sufficient number of tinning sets to take care of the output of black plates.

THE tin-house department of the Old Dominion Iron & Nail Works Company, Richmond, Va., is in regular and active operation. So far, terne plates alone have been made, including eight separate brands. Two brands each of charcoal and coke finish bright plates will shortly be added to the company's products. The erection of four black plate mills, in the near future, is contemplated.

CHARLES C. CLUFF, 46 Wall street, New York, has been appointed Eastern agent for the Illinois Steel Company, and will sell, among other products of the concern, sheet iron, tin plate, bars, &c.

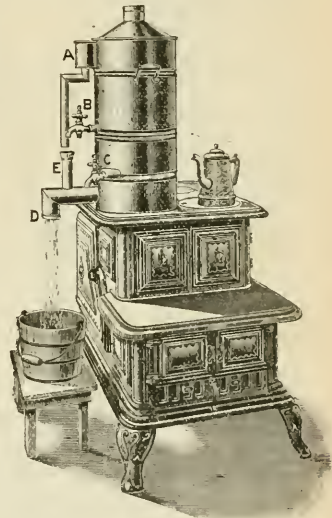
McCLURE & Co., 62 Second avenue, Pittsburgh, Pa., are distributing a folder, printed in red and blue, containing a list of the American bright and roofing plates specially manufactured for the firm, also the various grades of solder manufactured by them. An accompanying circular, addressed to architects and builders, calls attention to the merits of McClure's Redipped

roofing plate, which, it is claimed, is made from the best Siemens-Martin steel, heavily coated by the pure palm oil process, every sheet being stamped and re-squared.

THE tin plate works of the Laughlin Nail Company, now completing at Martin's Ferry, Ohio, are nearly ready for operation. It is expected that work will be begun about July 15. The plant consists of four hot and five cold mills and eight tinning sets.

The Aero Water Still.

The illustration herewith shows the Aero water still, manufactured by the Aero Water Still Company, 46 Wareham street, Boston, Mass., and designed to furnish a supply of pure water for family purposes where the local water supply is not of the desired purity. It is designed, for use, in connection with the ordinary cooking stove. Lime and other mineral and organic impurities of the water are retained in the still, and only pure water is given off. In passing from the still to the receptacle for catching the distilled water, the water drops through the air and thus becomes aerated. The



The Aero Water Still.

still is made in three different sizes for domestic use; and large styles are furnished for hotels, restaurants and public buildings. In use, the base should be filled with water until it overflows from the pipe D. Then fill the still with water by pouring it in at A, with the faucet B open, until the water begins to drop at D; then close faucet B and fill up to within ¼ inch of the top. After boiling for a time, the water in the top part gets hot; after which the faucet B should be opened so as to allow the water to drop slowly and keep a slight drip from D. This insures that the water level in the boiler is constantly maintained. The faucet C is to draw off pure water from the base, and is always ready for furnishing hot water for tea, coffee or other cooking purposes. Water for drinking purposes should be drawn from this faucet, and placed where it will cool. Should the pure water accumulate too freely in the fountain it will run over into the boiler below. When steam escapes from the top the top section should be replenished with cold water.

THE RETAIL STORE.

Why Wire is Put Up in Bundles of 63 Pounds.

One of the obscure questions connected with Wire is as to the reason for its being put up in 63-pound bundles. There is, we believe, no satisfactory answer, the origin of the practice being involved in obscurity. The following advices in regard to the matter, for which we are indebted to S. Barnett, Worcester, Mass., who is exceptionally well informed concerning all matters connected with Wire, will be of interest.

Putting up Wire in bundles of 63 pounds is a custom adopted by Wire manufacturers from the English Wire trade as a standard customary weight for a bundle of Market Wire or Wire which is sold to the Hardware trade for retailing.

An odd number of pounds like this for the weight of a bundle of Wire, which is not an aliquot part of a stone or hundredweight or of 100 pounds or a ton, would have been abandoned before this only it has been a happy average weight to make up a bundle of Wire of several pieces, in the same lengths as they come from the Wire block, and a convenient weight to handle for both seller and buyer, but there is no good reason to-day why any Wire should be put up in 63-pound bundles. Fifty or 100 pounds would be a more useful standard. Manufacturers prefer, when practicable, to sell in catch weight bundles, which occasions no waste in cutting one length of Wire to make exact weight. There are, however, several advantages in having exactly the same weight for each bundle, especially for carload lots, as in case of loss of Wire in transit, or of dispute in regard to weights between buyer and seller, if the number of bundles is known the weight can be estimated, and if the weight is known the number of bundles can be estimated. On catch weight bundles of Wire, weighed up in small lots for a carload and billed on the aggregate weight, and the Wire weighed in the same way when received by the buyer, it seldom happens that two weighers will get the same total weight. It is also an advantage to the manufacturer who works the Wire up into goods to give each of his workmen a bundle of the same weight each time, and simplifies the accounts he may keep of the amount of Wire used.

The question of the origin of this custom on Market Wire has been brought up frequently among wire workers, but never satisfactorily answered.

By referring to the Standard Dictionary under "Weight" in the table of current weights in use throughout the world and historic weights, you will notice that the British bushel of the value of $\frac{1}{4}$ hundredweight is represented by 63 pounds as the weight of a bushel of wheat, and I conjecture that whoever introduced the custom of using this weight for a bundle of Market Wire used this bushel weight as a basis. It was the custom in the United States 40 years ago to put up Market Wire in 63-pound bundles, and it was also imported from England in the same way.

From inquiries made here I understand that the large Wire mills in Eng-

land over 20 years ago were accustomed to put up Market Wire in bundles of 63 pounds. Fence Wire in 112-pound bundles (1 hundredweight), and fine sizes of Wire in stones of 12 pounds. A stone ranged all the way from 12 to 16 pounds, and I am told that a stone of Wire is 12 pounds in England the same as in the United States.

In Yorkshire, England, for many years it was the custom for the small Wire drawer to buy his Card Wire from the large manufacturer at No. 19 size, annealed, in 63-pound bundles, and draw it down to the finer sizes, and resell in bundles of 1 stone each.

J. P. Bedson, in his paper on "Iron and Steel Wire," read at the August, 1893, meeting of the Iron and Steel Institute in England, said in regard to Market Wire, that at Warrington, in 1840, the system of having the Wire drawer make up his Wire ready for the customer was abandoned, "and the work of Wire drawing was subdivided between annealers, cleaners, drawers and warehousemen. So much was this appreciated that the Wire was not only well received, but as a 'market Wire' secured a better price in those days."

Other varieties of Iron and Steel Wire are also put up according to customs established by different users. Netting Wire has been sold to the trade for so many years in bundles of 1 stone each that it is now generally known as Stone Wire, although the Netting manufacturers prefer it in catch weight bundles of 15 to 18 pounds each, and not to have a skein of this fine size of Wire broken to make exact weight.

Card Wire is put up in bundles of 60 pounds each, called a "Bow," but the card maker uses a coil of only 4 or 5 pounds at a time.

Music Wire is preferred by the piano string maker in 1-pound coils, as the workman cannot use a larger coil without getting it tangled, this Wire being very springy, but the trade who supply the string makers can use 5-pound coils conveniently.

Coppered or Furniture Spring Wire is most frequently put up in 100-pound bundles, but also in smaller bundles, and catch weights.

Telegraph Wire is ordered by the telegraph companies by the mile, as 100 miles or 1000 miles, but it is put up for shipment in catch weight bundles varying from 50 to 130 pounds. For instance: 1 mile of No. 8 Birming-

Fine sizes of Wire are very often put up in bundles of 1 stone each, also in catch weights. Fence Wire is put up in bundles of 100 pounds each, for convenience of handling, shipping and estimating on carload lots.

Pure Aluminum Egg Cookers.

Among the aluminum utensils put on the market by Silver & Co., 804-810 Hewes street, Brooklyn, and 20 Warren



Fig. 1.—Aluminum Egg Boiler.

street, New York, are the egg boiler and the egg fryer shown in the accompanying cuts. The egg boiler, Fig. 1, is 11 inches high, $4\frac{1}{2}$ inches in diameter at the line where the top of the boiler lifts off, and is provided with wrought iron standard in dead black



Fig. 2.—Holder for Egg Boiler.

finish. The egg holder, Fig. 2, has a capacity of four eggs and is lifted from the boiling water by the aid of the wire loops. The spirit lamp is reversible, one end holding the right quantity of



Fig. 3.—Aluminum Egg Fryer.

ham gauge Wire would weigh 378 pounds. This would be shipped in three bundles of about 130 pounds each. One mile of No. 14 would weigh 95 pounds, for which one bundle would be shipped weighing within a few pounds of this weight. Copper Trolley Wire is shipped in mile lengths on large reels made specially for this use.

alcohol for boiling eggs soft and the other end holding more for boiling eggs hard, so that timing the eggs is unnecessary. The aluminum egg fryer, Fig. 3, is made in a three egg size, but we are advised that a one and three egg size will shortly be made of cheaper material as well as in aluminum.

Some Stove and Hardware Dealers in Steuben County, N. Y.

BY HENDRICK.

Beautifully situated in the midst of the rich and thriving farming section of the county named lies the city of Hornellsville. It is here that W. G. Rose & Co. carry on the stove and hardware business, the house being one of the oldest established in the city. The firm carry a full stock of heavy and shelf hardware, agricultural implements, &c., and are the agents for the Andes stoves and ranges, made by the Phillips & Clark Stove Company. The firm also do a good deal in the way of hot air heating work, making use in nearly all of their contracts of the Kelsey furnaces, made by the Kelsey Furnace Company. The tin shop of the concern is located just above the main store, and in it they employ a large force of men manufacturing tin and sheet iron ware, as well as executing more or less jobbing work. At this season of the year the firm are pushing the sale of the New Process gasoline stoves of the Standard Lighting Company, refrigerators and other summer goods.

Sheldon Brothers occupy a large building on the main street, and do a thriving business in general hardware, stoves and farm machinery. The firm have been in business for many years and enjoy a large trade among their many friends. They place their orders for their line of parlor heaters as early as May 15, selling the Splendid ranges and heaters, made by the Fuller & Warren Company, in whose goods they have built up a large trade. Their store occupies two floors, the first being given up to hardware, paints and oils and house furnishing goods, while the second floor is devoted to a fine display of stoves and ranges.

At No. 3 Seneca street, just around the corner from the City Square, is located the new store of Schwaringle & Davis, who, though recently started, have built up a fine trade in hardware and house furnishing goods. They have pushed the sale of the Gold Coin ranges, made by the Bussey & McLeod Stove Company, and the Dockash goods, made by the Scranton Stove Works. Their tin shop is at the rear of the main store, where they do plumbing, tinning and general jobbing, Mr. Schwaringle having charge of this department. Just at present the firm are enjoying an excellent trade in bicycles, the front of their store to the left being given up to a display of the several makers' specialties for which they are agents.

M. J. Shaw is agent in Hornellsville for the Howe Ventilator parlor heater made by the Cortland-Howe Ventilator Stove Company. He sells for his leading line of ranges the Beaver, made by the Danville Stove & Mfg. Company, and the Amherst, made by the Buffalo Co-operative Stove Company. He also carries a line of shelf hardware, tinware and house furnishing goods, and gives attention to roofing and tinning in all its branches, employing several men in that department.

Charles F. McGuire, although not engaged in the sale of stoves and ranges, carries a heavy stock of general hardware and house furnishing goods. He also does plumbing work and light repairing, his trade being principally among the people in the city.

Somewhat away from the main street, and yet prominently located on the line of the street railway, is the large store of Wallace Roberts, where can be found a full and complete assortment of Red Cross stoves and ranges, made by the Rochester Co-operative Foundry Company. Since

the time Mr. Roberts has taken hold of this line he has sold many hundreds of the stoves, supplying his friends in the city as well as in the country. He is also agent for the Perfect furnace, made by the Richardson & Boynton Company, and has executed many large contracts during the past season, heating some of the finest residences of the city. In his particular line of work Mr. Roberts has achieved a reputation for doing a good job. He also carries a stock of hardware and house furnishing goods, but devotes most of his time to the stove and heating business.

Five miles east of Hornellsville, and connected by an electric railroad, is the village of Canisteo, where, since 1868, O. O. Laine has successfully conducted the hardware and tin business. At the present time he occupies a large double store, opposite the village green, where he carries a stock of general hardware and house furnishing goods. For his specialties in the stove line he handles almost exclusively the Sterling goods, made by the Sill Stove Works. He has sold many hundreds of these stoves to the farmers in that section of the country, a peculiar feature of the trade being that very few, if any, small stoves are sold in that neighborhood, Mr. Laine seldom having a call for a parlor heater smaller than 14-inch fire pot. He also carries on the tin and jobbing business, doing considerable if the way of tin roofing and furnace work.

Burrell & Carroll are also at this place. Having recently started in business, all their stock is new, and the store presents a very attractive appearance. At the right, as one enters the store, is a long row of hardwood boxes containing shelf hardware, with samples exposed, while at the left hand is a display of house furnishing goods and tinware. The leading lines of stoves are the Acorn goods, made by Rathbone, Sard & Co., and the Dockash, made by the Scranton Stove Works. Mr. Burrell is something of a fisherman, and loves to tell of his recent experiences during a trip through the South. He has displayed in his windows several large fish that he secured while on his vacation.

At Addison, N. Y., are Moore & Weatherby, who are engaged in the stove and hardware business which was established by Brewster & Brother in 1840. The present firm enjoy an excellent trade in the several lines of goods they handle, the leading specialty in the way of parlor heater being the Splendid, made by the Fuller & Warren Company. They are also agents for the sale of the Amherst range, made by the Buffalo Co-operative Stove Company. The firm deal in house furnishing goods, shelf hardware and farm machinery, the trade being almost exclusively with the farmers in that section of Steuben County, of which the boast is made that it furnished the hay and buckwheat that received first prize at the Chicago Fair in 1893.

A. Roberts recently succeeded K. E. Whitmore in the hardware business in Addison, and has added considerably to what was an extensive assortment of house furnishing goods and hardware. He employs several men in the manufacture of tinware, and does more or less jobbing and tin roofing. His principal lines of stoves are those made by the Sill Stove Works. He is also agent for the Splendid oil heaters and cook stoves, made by the Novelty Mfg. Company of Jackson, Mich.

L. G. Laine carries on the tin roofing and jobbing business nearly opposite the American House. He is agent in Addison for the Red Cross stoves and ranges, made by the Rochester Co-operative Foundry Company.

W. F. Bronson does a good business in stoves and hardware at Painted Post, N. Y. He also sells stoves, ranges and furnaces, and does tinning in all its branches. His store being the only one of the kind in the village, gives him an excellent trade among the inhabitants of the place and the farmers in that vicinity.

No. 343 Oil Heater.

The accompanying illustration shows one of a new popular price line of oil heaters manufactured by Edward Miller & Co., Meriden, Conn. No. 343, shown herewith, is one of the most attractive designs and embodies all the latest improvements. The base and legs are one piece of cast iron japanned, and the front or oil receptacle is of brass nickel plated. The burner is specially made for heating purposes and was constructed so as to give the largest possible amount of heat. It burns without a chimney and the



No. 343 Oil Heater.

flame may be adjusted at will. A striking feature of this heater is a cast plate which spreads the flame and directs it to the sheet iron drum which radiates it still further. This drum is of graceful shape, is surmounted by a handsome nickel ornament and is attached to the base by a hinge at the back and rests on two neat legs at the front, and by means of the hinge it may be thrown back whenever the fount is to be removed. As will be noticed this arrangement leaves the fount entirely open, giving a free current of air, which keeps the oil receptacle cool and promotes perfect combustion. This line of heaters is offered by the manufacturers as excelling in simplicity, ease in handling, cleanliness and heating power. The illustration is one of twenty-five different styles which are shown in the company's catalogue No. 48.

The Niagara Falls Power Company have not yet begun to lay their transmission wires to Buffalo. Some difficulties have arisen between the City Council of Buffalo and the company over a section in the proposed power franchise which stipulates that the power company shall fix a price for its power delivered at the Buffalo city line. This clause is objected to by the company, who refuse to accept a franchise fixing any price for power or light. It is believed that a clause will be substituted securing to the city a percentage of the gross receipts of the company.

Improved Meriden Lamp.

Meriden Bronze Company, 30 Park place, New York, are marketing the Improved Meriden lamp, as here shown in sectional form, designed for the ensuing season's trade. The tubular wick carrier with toothed fingers is raised and lowered

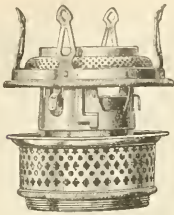


Fig. 1.—Chimney Gallery Raised.

by means of the parallel lifting device, joined above by a knob which serves as a finger piece. It will be seen the entire wick raising apparatus consists of but two pieces, readily detached when the burner is removed from the fount, but impossible under other conditions.

In re-wicking the tubular wick needs but to be slipped over the wick tube, when it is gripped by the prongs and drawn downward by pressing on the knob.

The upper part of the burner has a chimney gallery with bayonet joint to sustain the chimney while being lighted. The central cone, not seen in the engraving, is doubly concave, with perforations in the concave surfaces, insur-

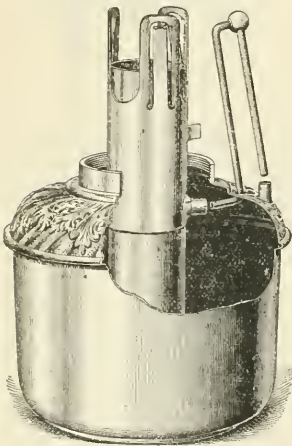


Fig. 2.—Sectional View of Oil Pot and Wick Lift.

ing an adequate supply of air, preventing, it is said, any tendency to weep.

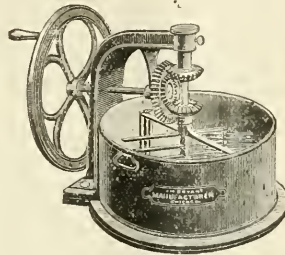
The burner is screwed into the fount or oil pot, making it secure and free from danger in lifting.

THE PAXTON HARDWARE MFG. COMPANY, Paxton, Ill., formerly known as the Leach Roaster & Baker Company, have opened a branch office in Room 11, Montauk Block, 115 Monroe street, Chicago. Messrs. Murray & Lyman have charge of

this department, and will make a specialty of visiting the jobbing trade. They have recently obtained control of the Champion Roaster and many other Hardware Specialties. These goods have been sold during the past seven years through agents and are well known by consumers throughout the country. They now anticipate reaching the consumer through the hands of jobbers and retailers, and for this purpose are increasing the capacity and output of their plant at Paxton by erecting new buildings and putting in new machinery.

Bryant's Lightning Mixer and Egg Beater.

The J. H. Bryant Mfg. Company, 61 to 67 Michigan street, Chicago, have brought out a new pattern of their mixing machine and egg beater, which is intended expressly for family use. An illustration is herewith given. It is intended for mixing angel food or other cake, pan-



Bryant's Lightning Mixer and Egg Beater.

cake batter, pie crust, beating eggs, whipping cream, &c. The machine has four distinct feeds and three dasher motions, enabling it to do the work quickly and thoroughly. The mixing pan is porcelain lined and the dashers are tinned. The capacity is 8 quarts. The machine is handsomely painted and decorated.

Rochester Giant Lamp.

The Rochester Lamp Company, 42 Park place, New York, have perfected and are now offering to the trade the Rochester Giant lamp in an improved form, as hereshown. One of its features is the arrangement of the air supply and vents. Intended largely for outdoor use, precautions have been taken to so regulate and control the air supply as to make it free from the influence of high winds or any swinging motion. In each corner is an interior tapering tube, perforated at the top outside and open at the bottom inside. This provides a series of channels for properly distributing currents of air on accepted tubular principles. At the bottom on all sides the metal is perforated freely to admit copious supplies of new air, the force of which, however, before reaching the powerful flame is broken by first striking the solid interior wind guards. As made now the fount is suspended in a wide circular metal band, which fits under the projecting rim of the oil pot and is sustained by four wire rods riveted to the corners of the frame. The bottom of the frame is glass, while the sloping roof or dome is

lined with corrugated metal reflectors which prevent any under shadows. The vent at the top consists of two perforated metal cylinders or cones, causing a check on the upward current. Underneath the cap is an asbestos lining to prevent overheating the metal and in-



Rochester Giant Lamp.

luring the paint. There are no soldered joints, it is said, every connection being riveted.

THE firm of Sheehan & Linton of New Britain, Conn., stove dealers, have been dissolved. Mr. Linton will continue the business.

REYMOND & GOTTLÖB, 830 Broadway and 18 Maiden Lane, New York, manufacturers of and dealers in aluminum goods, cooking utensils and household ware, distribute as an advertisement an attractive little paper cutter and 5-inch rule of aluminum. The firm report a large and increasing demand for their specialties in the new metal. They are constantly adding to their lines of aluminum household and fancy goods. The firm issue a large 10-page illustrated catalogue of the various articles manufactured and dealt in by them. These include cooking utensils and household ware, napkin rings, sugar, salt and pepper shakers, egg cups, match holders and various fancy articles. They call special attention to their camp cooking outfit for six persons, every article in which is manufactured of aluminum, each piece being spun from a single piece of metal without seams. A complete outfit embraces 40 different articles, the total weight being only 13½ pounds. A lesser field outfit of 21 articles weighs but 6 pounds.

The Adams Coffee Pot.

Good coffee is so indispensable at the dining table that the apparatus for producing it is always interesting. A new pot for the public favor is being made by Adams & Son, Owego, N. Y., who have taken out patents for its construction. A sectional view is shown herewith. The body, or outside, is an ordinary straight pot. Within this is a loose fitting cylinder, with closed top, and with a knob or handle to lift by. Within the lower end of this cylinder is a cone shaped



The Adams Coffee Pot.

basket, made of tinned wire cloth, and held in position by a tinned spring-wire frame, which is easily removed to place the grounds within it. A small opening in the top of the cylinder allows the air to escape, so that, when the cylinder (with the basket of grounds) is placed within the pot, which has the required amount of water, it will settle to the bottom, thereby immersing the grounds in the water. When a sufficient pressure of steam is produced, during the steeping process, it will raise the cylinder and thereby remove the grounds out of and above the liquid, thus putting a stop to the steeping. In operation, after the pot and basket have been filled, the Adams pot is said to take care of itself and work automatically without attention. If a stronger coffee is desired than is gained from one steeping the pot should be moved to a cooler part of the stove, when the basket will settle and enable the ground coffee to go through the process a second time. With this pot, it is claimed, a clear coffee of an equal strength and flavor can be made every time by an inexperienced person and bitter coffee is impossible. The pot can be easily cleaned and is not likely to get out of order.

Exhibition of Appliances.

Several interesting devices are on exhibition at the Bohemia Roof Garden, at Thirty-sixth street and Broadway, New York, which is open afternoon and evening. In the evening the building is lighted by Wellsbach burners, using gas manufactured in the room by a machine made by the New York Gas Atomizer Company of 1362 Broadway, New York. The plant is similar to those placed by the company wherever artificial gas for lighting is desired and where no corporation gas works are convenient. The gas is manufactured from gasoline, which may be stored a short and safe distance from the building and carried to the atomizer by pipes. The machine, which is operated by a weight, runs the apparatus, and compresses the gas under a sufficient pressure to force it through the pipes to the burners, where it is used for illumination. In connection with their exhibit they show a varied line of gas cooking and heating appliances suitable for use

in connection with the gas made in their apparatus. One of these exhibits is a hot air furnace designed to use illuminating gas. Another exhibit is made by the Oilgas Heating Company of 312 Main street, Peoria, Ill. Their exhibit shows the use of oil for a fuel in an ordinary cooking range. At one side of the range on the floor is a 10-gallon galvanized iron tank containing about two gallons of oil. Connected with the tank is an air pump and a pressure gauge for use in subjecting the oil to a pressure of five pounds, which forces it through the piping to two burners placed under the cooking holes in the fire chamber of the range. In operation a small quantity of oil is run into the drip cups below the burner, when the supply is shut off and the oil lighted. After the burner is hot the supply is turned on again and the oil generated into a gas previous to its exit, through a small opening, to an air mixing chamber. From the air mixing chamber it is distributed to a burner orifice and burns with a pink tipped blue flame of intense heat. This apparatus, it is said, is used largely in the West, and is being introduced in the East, little objection being made to it by the insurance companies, owing to the fact that the reservoir containing the oil is located below the fire chamber and will not rise to it without the application of pressure. The oil tank is provided with solder plugs, so that should a conflagration take place in the building in which it is used these plugs will melt and allow the gas to escape from the oil, thus preventing an explosion.

The Ezy Raisin Seeder.

The American Specialty Company, Hartford, Conn., and 182 Lake street, Chicago, are placing on the market the



The Ezy Raisin Seeder.

raisin seeder here shown. In operation, the meat of the raisin is crowded up into the grooved presser head and the seeds unbroken are forced through the wire bed into the removable tin cup. It is explained that the form of wire bed gives increased strength and that the wires being unbroken do not become bent or broken. The work is always in sight and a pound of raisins, it is stated, can be cleanly seeded in five minutes. The seeder, which is manufactured by the company, was patented May 21, 1895, and is designed to retail for 25 cents.

MEMORANDA.

THE Canfield Stove Company of Kingston, N. Y., celebrated the completion of their building a few days ago by hoisting over it the Stars and Stripes on a large gold mounted staff. The new structure is four stories in height and contains about 10,000 square feet of floor space. The first and second stories of the front are in the form of an arch made of Trenton brick, with keystone and trimmings of blue cut stone. Above this are two stories constructed with selected local brick with arches and pilasters, the whole being surmounted with a glazened cornice. At each side of the entrance are large show windows. The floor of the vestibule is laid with tile of handsome design and has the company's name in white tile in the center. The design of the entire front of the structure is different from anything erected in that locality and has attracted much attention. The cellar of the building is fitted with several hundred bins and racks for holding repairs and also contains the steam boiler. The first floor, devoted to the sales department, has a handsome steel ceiling neatly decorated, hard wood floor and tinted walls. One large show window is fitted up as a modern bathroom, with handsome porcelain bathtub, modern embossed water closet, and pink lavatory marble floor and tile wainscoting, while the other window has a display of mantels with open fire place grates and tile hearths, ranges, &c. The office is located in one corner of the room on a raised platform and inclosed with a neat iron railing. It is connected with the other floors by means of speaking tubes and call bells. The second floor is devoted wholly to plumbing, heating, tin and sheet iron workrooms. In one corner is a private office where estimating and drafting are executed. The third floor is devoted to stoves, and the fourth to the storage of tinware and lighter goods. The elevator is so placed that goods can be shipped or received and distributed to the different floors without interfering in any way with the sales department. Nearby is a dumb waiter, used to handle small articles between the workshops and the first floor.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich., advise us that during next month they will make a number of valuable additions to their well-known line of Carpet Sweepers. For the coming fall season they state that their line of these goods will be especially complete and sufficient to meet every demand in every section of the world for Carpet Sweepers.

Some interesting figures in regard to the city of London are gleaned from a recent report of the Registrar General of that city. The estimated population of London last year was 4,349,166. The area included in the city was 121 square miles, containing no less than 1793 miles of streets. On the average 58 persons inhabit each acre of ground in the metropolitan district, or 87,250 on each square mile. The births registered in London last year were 180,553, equal to 30.1 per 1000 of the estimated population. The excess of births over deaths was 53,514, the deaths numbering 77,039, or in the proportion of 17.8 per 1000 persons living.

The International Railway Congress was formally opened in London, on Wednesday, by the Prince of Wales. For five weeks there will be a series of meetings and excursions to various points of interest in Great Britain. Fifteen American railroad companies are represented at the Congress.

PLUMBING and GAS FITTING.

The Effects of Blasting on Plumbing.

The Fire Commissioners of the city of New York have applied to have some stringent regulations enforced in reference to the way blasting is done in the city. Their intentions seem to be in the direction of public safety rather than to secure immunity from fire. Their recommendations provide for a maximum size of blasting charge and for the covering of the ground around the blast with timbers of sufficient size and weight to prevent the material being hurled into the air as a result of the charge. No serious complaint has been raised as to the effect of the large charges used in the blasting and the resulting shocks on the plumbing work in buildings in the near vicinity, though it is quite possible that some of the split hubs and cracked soil pipes and fittings are due to this cause. It is also reasonable to think that some of the horns on earthenware were broken as a result of the shaking of the buildings resulting from blasting of cellars in the neighborhood. It has been the experience of all plumbers that the sanitary system of a building is more or less strained and deranged as a result of the natural settling of the building; and if this is true, how much more likely are the shocks mentioned to produce leaks that would permit sewer gas to freely enter a dwelling?

Montreal Plumbing News

We are indebted to J. W. Hughes, 26 Bayle street, Montreal, Canada, for the following letter relating to plumbing matters in his neighborhood:

The return of John Date, who represented the master plumbers of the Province of Quebec at the annual convention of the National Association of Master Plumbers, has infused fresh energy and enthusiasm into the members of the craft in this city. Mr. Date reported his reception as being hearty and cordial beyond his greatest expectations. Active steps will at once be taken toward completing the formation of a Dominion Master Plumbers' Association in order to facilitate the union of the members of the craft with the American plumbers. A petition has been sent to the Mayor of Montreal, praying for the repeal of such portions of the new plumbing by-laws as forbid the use of tile drains inside of dwellings. The Master Plumbers' Association, however, are taking active steps to prevent so disastrous and backward a move as this would prove to be, should the petitioners succeed in their mistaken efforts. The petitioners claim suitability, durability and cheapness for the tile pipe as compared with cast iron. It is surprising that in the present day such claims should be advanced for a material that has proved in thousands of cases most unreliable, and which is forbidden for use as inside drains by all really well regulated com-

munities. The matter has been left in the hands of a special committee under the chairmanship of Alderman C. Beausoleine, who, as chairman of the City Health Committee, may be depended upon to see that no such interference with the most important clause in his plumbing by-law is permitted.

National Association of Master Plumbers.

We print below a revised and corrected list of the officers and committees of the National Association of Master Plumbers, including the full list of State vice-presidents, with their addresses:

Officers.

President. James Meathe, 92 Fort street, West, Detroit, Mich. (Builders and Traders' Exchange).
Vice-President. Thos. H. Radcliffe, 234 Fulton street, Brooklyn, N. Y.
Financial and Recording Secretary. James H. Crumley, 284 Woodward avenue, Detroit, Mich.
Treasurer. Wm. E. Goodman, 444 East Water street, Milwaukee, Wis.

EXECUTIVE COMMITTEE.

James Meathe, 92 Fort street, West, Detroit, Mich.
Thos. H. Radcliffe, 846 Fulton street, Brooklyn, N. Y.
James H. Crumley, 284 Woodward avenue, Detroit, Mich.
Wm. E. Goodman, 444 East Water street, Milwaukee, Wis.
John Mitchell, 113 Hudson street, New York City, N. Y.
Daniel G. Flunerty, 478 Boylston street, Boston, Mass.
L. B. Cross, 1212 Main street, Kansas City, Mo.
C. C. Dewstoe, 290 Seneca street, Cleveland, Ohio.
Wm. H. Doyle, 221 South Sixteenth street, Philadelphia, Pa.
T. P. Culleton, 50 North Clark street, Chicago, Ill.

APPRENTICESHIP COMMITTEE.

J. L. McShane, 19 Seventh avenue, Pittsburgh, Pa.
Chas. H. Humbert, 401 Market street, Pittsburgh, Pa.
F. P. Blythe, 56 Wylie street, Pittsburgh, Pa.

ESSAY COMMITTEE.

Paul Redieske, 99 Claybourn avenue, Chicago, Ill.
J. J. Wade, 298 Dearborn street, Chicago, Ill.
Jno. G. Roland, 952 North Halsted street, Chicago, Ill.
Thos. Conway, 614 Sixty-third street, Englewood (Chicago), Ill.
W. T. Geary, 72 Thirty-first street, Chicago, Ill.

SANITARY COMMITTEE.

Jas. Ahern, 280 Asylum street, Hartford, Conn.
L. H. Mills, 28 Middle street, Bridgeport, Conn.
J. B. Wielant, 67 Arch street, New Britain, Conn.
S. E. Dibble, 639 Grand avenue, New Haven, Conn.

Thos. D. Barlow, 63 Grand street, Waterbury, Conn.

STATE VICE PRESIDENTS.

Arkansas, J. A. Monagan, ———
Eureka Springs.
Arizona, D. H. Burtis, 27 East Washington boulevard, Phoenix.
Alabama, Jas. T. Palmes, 69 St. Francis street, Mobile.
California (Southern), Geo. E. Howe, 554 South Spring street, Los Angeles.
California (Northern), Jas. E. Britt, 7 Eighth street, San Francisco.
Colorado, Jos. A. I. Claudon, Glenwood Springs.
Connecticut, Andrew J. Clerkin, 779 Grand avenue, New Haven.
Delaware, I. N. Eaton, 407 Shipley street, Wilmington.
District of Columbia, Jas. Cunningham, 930 S. street, Washington.
Florida, Wm. Clark, 47 Forsyth street, Jacksonville.
Georgia, W. P. Bennett, 563 Mulberry street, Macon.
Illinois, Jos. B. Breen, 368 West Van Buren street, Chicago.
Indiana, Chas. Wahnsiedler, 213 Upper Second street, Evansville.
Iowa, John Burnside, 611 West Locust street, Des Moines.
Kansas, C. J. Prescott, 113 East Seventh street, Topeka.
Kentucky, A. M. Ramsey, 806 W. Market street, Louisville.
Louisiana, M. T. Rosenblath, 231 Travis street, Shreveport.
Maine, Jno. B. Smith, 40 Main street, Lewiston.
Maryland, J. C. Mitchell, 103 West Lombard street, Baltimore.
Massachusetts, Jno. F. Deedy, Salem square, Worcester.
Michigan, Wm. T. McGurrin, 184 East Filton street, Grand Rapids.
Minnesota, Geo. A. Kees, 473 Broadway, St. Paul.
Missouri, R. T. Connell, 815 Francis street, St. Joseph.
Mississippi, T. J. Cady, Columbus.
Montana, I. Krueger, 118 North Main street, Butte.
Nebraska, John Rowe, 1517 Howard street, Omaha.
New Hampshire, Robert J. Donnelly, Portsmouth.
New Jersey, C. Sullivan, 184 Market street, Newark.
New Mexico, A. H. Staehlin, Albuquerque.
New York, W. G. Reid, 111 East Avenue, Rochester.
Ohio, Louis Popowsky, 146 Woodland avenue, Cleveland.
Oregon, L. H. Buddemer, 285 Yamhill street, Portland.
Pennsylvania, John A. Kramer, 912 North Third street, Harrisburg.
Rhode Island, Patrick Tierney, 522 Westminster street, Providence.
South Carolina, O. S. Miskally, 194 King Street, Charleston.
Tennessee, G. P. Ashe, 701 Gay street, Knoxville.
Texas, W. W. Otter, Houston.
Utah, Henry C. James, 164 West Temple street, Salt Lake City.
Vermont, J. P. Bagley, White River Junction.
Washington, J. E. Young, 1003 A street, Tacoma.
Wisconsin, W. H. Haley, 445 Jefferson street, Milwaukee.
North Carolina, W. H. Byce, Asheville.

Reception to President Meathe.

The Master Plumbers' Association of Detroit, feeling that it was an honor to have one of their number elected to the presidency of the National Association of Master Plumbers, and as an expression of their feeling, tendered an informal reception to James Meathe, on last Monday evening, at the rooms of the Builders & Traders' Exchange, Detroit, Mich.

The reception was attended by nearly all the members of the Detroit association and a large number of guests, among whom might be mentioned: A. G. Alexander of the famous "Ben Hur" Farm, Walkerville, Ont.; E. A. Morris, secretary of the Detroit Lead Pipe & Sheet Lead Works; James Harvey and S. Clark of Harvey Sons Mfg. Company, Inc. Walker and C. C. Deuell of James Walker & Sons, Chas. B. Sales and Murray W. Sales of Sales Bros., Jos. Boyle, secretary of the Park & McKay Company; Sanitary Clerk Wisner of the Health Department. The Board of Directors of the Builders & Traders' Exchange were also present and extended their congratulations. Several other prominent members were present, including John Finn, Martin Scholl, Jr., R. Nelson, Conrad Clippert, Jos. Myles, J. D. Candler, Frank W. Oliver, Robert Robertson, M. Finn, Peter Brennan, Benj. F. Guiney, secretary of the Michigan State Association of Master Plumbers; W. Etnamet Crosby, national executive clerk N. A. M. P. The rooms were tastefully decorated for the occasion. Spell's orchestra furnished the music. Coon & Walker, caterers, and a committee in charge furnished a liberal supply of refreshments and cigars. Mr. Meathe was introduced by James W. Portland, who spoke for the Detroit association, saying how much they appreciated the honor which had been conferred upon Mr. Meathe, as much for themselves as for that gentleman; that, knowing Mr. Meathe as well as he did, he had perfect confidence in the fact that the National Association would have no cause to regret their action. Mr. Meathe thanked those present for the courtesy. He spoke of the National Association and its splendid growth and its objects, and at the conclusion of his remarks promised that the good work which had already been done by the association would continue during his administration, and asked the co-operation of all, that he might succeed. During the evening, in addition to the orchestra, an informal entertainment was provided by the Eureka Quartet, one of the leading musical organizations of the city. The affair lasted until some hours after midnight. Everything was informal and everybody had a good time.

The New Jersey State Association of Master Plumbers

Last night, in response to a call from Elias Berla, president of the New Jersey State Association of Master Plumbers, the plumbing trade from all sections of the State was represented at a meeting at the headquarters of the Newark association, at Newark, N. J. The object of the meeting was to ratify the formation of a State association of master plumbers for New Jersey, which was made by the delegates to the national convention at Philadelphia on June 13. The officers selected at that meeting were re-elected, and a series of plans formulated for thoroughly organizing the plumbers throughout the State. Among those in attendance and active in making the meeting a success were Elias Berla,

C. Sullivan, the new State vice-president; Alexander Don, Charles E. Bond, W. Zelfi, F. J. Sturm and N. J. Steimer of Newark; John Hickman, J. T. McNabb and J. Kearney of Paterson. After the business of the meeting was transacted a light collation was served and the delegates took their departure.

Detroit Plumbers Must Reregister.

Under the new rules governing the Bureau of Sanitary Plumbing, house drainage and ventilation—in accordance with the State law creating the Board of Health—all plumbers in Detroit must be registered at the Health Office before September 1. This includes all who have been examined and licensed as well as those who have not. Those who have certificates and licenses can obtain new licenses and certificates at the Health Office without cost and without undergoing new examinations. Those having the necessary documents who fail to reregister will have their licenses and certificates revoked and will be required to pass another examination before obtaining new papers. Heretofore the cost of licenses has been \$3 each, while \$1 has been charged for certificates. Hereafter the cost will be \$1 for a license and certificate issued to one person, and 50 cents where only the certificate is issued. Copies of the new rules governing sanitary plumbing, house drainage and ventilation may be obtained at the Health Office free of cost.

TRAPS AND VENTS.

THE E. C. CAUVET Company of Minneapolis, manufacturers of plumbers' supplies, have been incorporated, with a capital stock of \$10,000.

J. S. WILLIAMS, Beaver, Pa., has formed a partnership with Mr. Johnson, a plumber, and the firm will be known as J. S. Williams & Co.

THE master plumbers of Cohoes, N. Y., have organized and elected these officers: President, A. G. Burbanks; vice-president, W. J. Barrett; secretary, Bart. Cooney; treasurer, William English; trustees, Henry Lancaster, David Clark and H. E. Bottum.

C. F. JENKINS, Elmira, N. Y., succeeds the firm of Le Valley & Jenkins in the plumbing business at 154 Lake street.

JOHN VERMEULEN has withdrawn from the plumbing and heating firm of Gardinier & Vermeulen, Paterson, N. J., and will conduct a plumbing, steam, gas fitting and sheet metal working business at 20 N. Main street, Paterson, N. J.

WORK is reported brisk at the brass shops of the E. Stebbins Mfg. Company, Springfield, Mass., makers of plumbers' brass and iron goods, and owing to increased business wages have been advanced and the working force largely augmented.

FRED HAND has opened a plumbing shop at Framingham, Mass.

ALL the operatives in the sanitary ware potteries at Wheeling, W. Va., have been given an advance in wages of 10 to 40 per cent., in accordance with the recent action at the Trenton, N. J., potteries.

ALL the plumbing fittings of the new cup yacht "Defender," now under construction at the Herreshoff yards, Bristol, R. I., are to be made of aluminum. Everything about the kitchen, in the way of cooking utensils, &c., is

also constructed of this metal, in order to secure the minimum of weight on board.

JAMES MEATHE, president of the National Association of Master Plumbers, will make the national headquarters at Detroit, in an office in the Builders and Traders' Exchange, 92 Fort street, West, where all communications should be addressed.

THE Campbell Supply Company of New York City have been incorporated to purchase and sell plumbers' and steam fitters' supplies, with a capital of \$8000. The directors are William Campbell, M. F. Campbell and John Buzzini of New York.

D. B. ARMSTRONG & Co. have moved their plumbing business from Roxbury to 106 Perkins street, Somerville, Mass.

BRADLEY & KNOWLES, plumbers, at Arlington, Mass., sustained a \$600 loss by fire this week, partially covered by insurance.

J. O. WILSON is making 92 Walker street a bright spot in New York. This is the city office of R. M. Wilson, Rome, N. Y. The plate glass window has been polished, and there is displayed one of the Wilson patent solid copper bathtubs, handsomely nickel plated, resting on gold bronzed ornamental supports, and finished with a selected polished wood rim. It sheds a refugence that is dazzling. Plumbers who wish their customers to be "in the swim" should provide them with a Wilson plated solid copper bath.

THE Master Plumbers' Association of Newark, N. J., has appointed Ira Budd, F. J. Sturm and William Jacobi a committee to make arrangements for the annual outing and clam bake at Pleasure Bay, N. J., on Saturday, July 27. Already a very handsome souvenir programme has been prepared for distribution.

THE Victor Mfg. Company, Blairsville, Pa., are now running their works on a fine line of enameled baths, sinks, lavatories, hopper closets and enameled sanitary ware. They also make a specialty of enameled goods of every description, such as acid proof caldrons, preservers' kettles, porcelain lined filters and water coolers. It is claimed that their enamel is an insulator and can be used with advantage in electrical work. Their furnaces are heated with natural gas, giving a clean heat of very high temperature which enables them to turn out a fine quality of ware. Their porcelain enamel is said to be a very hard, vitreous substance, very white, possessing a high glaze, and adhering tenaciously to the iron.

THE Mosely Folding Bath Tub Company of Chicago report a steadily increasing demand for their specialties, particularly bath heaters and range boiler heaters. A letter from a party using one of their gasoline heaters for the kitchen boiler states that it is like the bicycle, and wonder is expressed that the user ever got along without it, and that a quart of gasoline will heat a 30-gallon boiler hot enough for laundry work at a cost of 3 cents. These heaters have been placed in the residences of some of the most prominent people in different sections of the United States.

THE Union Brass & Metal Mfg. Company, St. Paul, Minn., are issuing their 1895 catalogue of brass goods and plumbers' specialties, known as the Union Catalogue B. An introduction calls attention to the fact that they are adding to their line of specialties and that all their goods are inspected and tested previous to shipment. A line of Union siphon tanks of various styles is

illustrated. Another series of illustrations shows the Union closet seats and closet supplies. A page is devoted to showing the Success siphon valve, followed by ball cocks, legs for closet seats and Union closet repair connection. Two pages are devoted to list prices for a variety of plumbers' brass goods. The next two pages illustrate Pressure cleanouts and pipe closers for use in testing soil pipe. The last page shows an illustration of the Hercules seamless copper ball float for use in steam traps, receivers and hydraulic machinery where high pressure is used.

THE Horix Mfg. Company, 970 Hamilton street, Cleveland, Ohio, are issuing their 1895 catalogue of the Lightning water heater. The heater is made in two sizes, the larger size being designed for heating water instantaneously for bathing and laundry purposes; and it is claimed that it will furnish a continuous stream of water at any given temperature, regulated by means of the supply cock, up to 150 degrees, the smaller size being adapted to general domestic use. Testimonials accompany the catalogue.

H. P. TREAT, mechanical engineer and millwright, is sending to the trade a blotter from the Wallabout Market Jobbing Shop, 176 Flushing avenue, Brooklyn, calling attention to the varied character of work which one responsible party is prepared to do in a house, store or factory. Plumbing, gas fitting and steam and hot water heating is looked after in one of their departments. Hoisting machinery, steam and gas engines, electric motors and dynamos and general electric work occupies another department. The carpentry and millwright work is another department.

AMONG the contracts recently taken by J. J. Colvin, 159 La Salle street, Chicago, can be mentioned the following: Tin, galvanized iron, copper and tile work for the three residences of J. L. Cochran, Edgewater; galvanized iron work for the store and flat building of Charles Hoff, Laurel avenue; galvanized iron and slate work for the Presbyterian Church, Washtenaw avenue; galvanized iron work for the store and flat building of John Bell, West North avenue; copper and galvanized iron work for the store and flat building of M. L. Eckert, North Clark street.

THE following plumbing firms have lately started business in Chicago: Sporer & Hinzle, 429 School street; Frederick W. Heck, 3557 Wentworth avenue; John J. Foster, 800 Twelfth place; Gellret & Weil, 819 West North avenue; Burt & Stewart, 5622 Halsted street; Conway & Barrett, 1018 West Fifty-third street.

We are indebted to Albert Spies, editor of *Cassier's Magazine*, for an advance copy of the Niagara Power Number of that journal. The volume is notable on many accounts, giving a complete story of the Niagara power enterprise in ten articles with nearly 200 illustrations. The articles are written by eminent men connected with the work, and the illustrations are beautifully executed and printed. The style of presentation is in keeping with the excellent material presented.

An entirely new type of vessel will, it is reported, soon be built at Chatham for the British Navy. She will combine the features of a fast gunboat and a torpedo boat destroyer, will be propelled by electricity and possess a submergible hull. The vessel will be 210 feet in length and is designed to make a speed of 30 knots an hour.

HEATING NOTES.

WE are indebted to the Gurney Heater Mfg. Company, 163 Franklin street, Boston, Mass., for a copy of their trade catalogue for 1895. The volume, which is described as the desk edition of the catalogue, is about 8 inches square, fastened at the back with a yellow silk cord and bound in flexible covers of green paper, with the trade name of the boilers in gilt on the side. In an introductory note they call attention to their well-known line of hot water heaters, and further mention that in response to a desire expressed by architects, engineers and fitters who have been pleased with their hot water heaters, they have placed upon the market a series of steam boilers. They favor hot water for heating as a general rule, but recognizing the demand for the other style of apparatus they have brought them out to meet the wishes of the trade. Following the preface is the announcement in prominent type, "Our manufactures are sold only to the trade. We are not contractors for erecting apparatus." The first part of the pamphlet, covering 42 pages, relates to hot water heaters, the 300 Series, Bright Idea, Double Crown and Defiance being illustrated by numerous cuts. The brick set and portable heaters are shown and full descriptions are given of the construction and special features of the apparatus; special views of the parts are presented and tables of sizes and prices given. Part 2 relates to steam boilers, showing the Gurney, Bright Idea and Defiance. The apparatus are similarly illustrated with general and sectional views and full particulars are given of their sizes and capacities. The Gurney radiators occupy part 3, the Gurney, Harvard and Yale Quintet being noted. Part 4 is the fitter's guide, with illustrations, tables, data and other useful information. This covers, including the estimate blanks, over 40 pages and is a repository of much useful information for the steam fitter. House plans are presented, showing the run of pipes; a sectional view explains an overhead tank system of hot water heating for use in offices; several illustrations and information are given respecting steam heating and at the end are serviceable tables. A cipher guide and alphabetical index complete the pamphlet, which will be a welcome one to those engaged in the steam and hot-water heating business.

THE Elwood Radiator Works, Elwood, Ind., resumed operations last week. No radiators will be made for the present, but the plant will be remodeled and thoroughly equipped with new and modern machinery. Meanwhile, the present stock of radiators will be disposed of and arrangements made for the sale of all the future product of the plant. The works, it is reported, will employ 300 hands and will be one of the largest plants of its kind in the West.

THERE is good promise of a strong State association of master steam fitters in Connecticut. Already over 30 firms have taken the action which insures their membership. The movement is being made by the same men who have brought the State Association of Master Plumbers into such a flourishing condition.

L. R. BLACKMORE, manager of the New York house of the Craig-Reynolds Foundry Company, Dayton, Ohio, has recently been granted a patent for a house heating boiler of the vertical section type.

GLOBE STEAM HEATER COMPANY have been incorporated at North Wales, Pa., with a capital of \$45,000. The directors are Hosea K. Kriebel,

Reuben O. Kriebel, North Wales; Frank M. Dampman, Philadelphia; Harry A. R. Dietrich, South Bethlehem, and Andrew J. Lyon, Norwich, N. Y.

C. V. KELLOGG, treasurer of the American Boiler Company, 84 Lake street, Chicago, has returned from a trip to New York and Baltimore.

THE S. WILKS MFG. COMPANY, 113 to 123 South Clinton street, Chicago, have lately shipped two large heaters to San Francisco, two for the United States Barracks at Baltimore and have received large orders from Kansas City, St. Paul, Omaha and other points East and West.

CLARENCE M. WOOLLEY, secretary of the American Radiator Company, Chicago, visited the New York office, at 92 Centre street, this week. Mr. Woolley looks well and is pleased with the reception of the new Varona radiator by the trade. Another of their attractions is the Italian flue semi-direct box base radiator, arranged for either bottom or back opening for the air supply.

W. P. DAVENPORT of the Exeter Machine Works, Exeter, N. H., this week visited their New York agents, Lockwood & Adams, at 143 Centre street, in the interest of their line of Exeter radiators. A satisfactory business is reported.

The Peerless Gas Generator and Burner.

The Peerless Gas Generator & Burner Company, 503 Hamilton Building, Pittsburgh, Pa., are putting on the market the Peerless hydro-carbon gas generator and burner shown in the accompanying illustration. The burner shown is designed for use with cooking stoves, but other sizes and styles of



The Peerless Gas Generator and Burner.

burners are also made designed for use in hot air furnaces and house heating boilers. It is claimed that the burner will generate gas from the lowest and cheapest grade of refined oil. In operation the oil is put in a 29-gallon tank placed either in the cellar or on the floor beside the stove, and it is said that it works best when the tank contains not over 5 gallons of oil. An air pump and pressure gauge is connected at the top of the tank, and the space in the tank above the oil is filled with air until a pressure of about 5 pounds is shown. This forces the oil into the burner. In lighting, a sufficient quantity of oil is run into the tray under the burner to heat the burner thoroughly after it is lit. When the burner becomes hot the oil passing through it is generated into a gas and issues from an aperture into an air mixing chamber leading to a burner, from which a blue flame of intense heat issues. It is stated that it can be started ready for cooking in one minute, and that one of these burners placed in an ordinary cooking stove will furnish sufficient fire to bake, broil or do any of the other work of the kitchen to the entire satisfaction of the cook. One gallon of oil is said to run the stove for ten hours and generate sufficient heat to warm a large room in zero weather. The company also furnish a list of insurance companies who make no objection to the use of this system of oil burning.

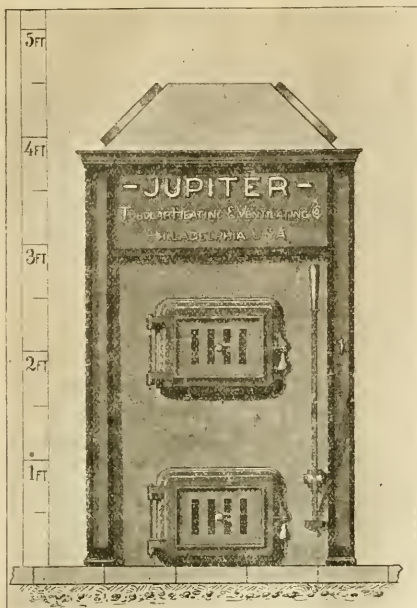
Jupiter Hot Air Furnace.

The Tubular Heating & Ventilating Company, 228 Quarry street, Philadel-

into the furnace at the air inlet. Entering the tubes at their lower ends, it is warmed by the waste products of combustion as they enter the smoke flue, and becomes hotter in its passage

rect heat. The course of the products of combustion is easily seen. Following an upward course from the fire they are diverted by the upper tube sheet downward along the tubes until they meet two baffle plates, which compel them to take a zigzag course to the smoke outlet. The manner of exit allows of the waste products of combustion being utilized to warm the cold air at point of entry.

The makers claim that the furnace is made of the best materials and is absolutely gas tight. It is easily cleaned or inspected when required, the name plate on the front of the boiler sliding upward to allow of access to the tubes. A door in the front of the hot air chamber and above the name plate gives further access, so that every part of the furnace may be conveniently examined. The makers claim for this furnace an advantage over other furnaces in that it is adapted for use in the shallowest cellars; that economy in fuel is obtained on account of the fact that 88 per cent. of the heat units in the coal is utilized for heating air, and that it is cheap, compact, most durable, and, when required, easily repaired. The furnace is made in seven sizes, and Reeves & Smiley, 129 North Second street, Philadelphia, have been appointed agents for Eastern Pennsylvania, South New Jersey, Delaware and Maryland.



Jupiter Hot Air Furnace.—Fig. 1.—Front View.

phia, are putting on the market the Jupiter hot air furnace, shown in the accompanying illustration, which embodies a direct departure from the lines usually followed in furnace construction. Fig. 1 is a front view. The scale on the left shows the height of the furnace to be 4½ feet, and it is stated that the largest size made does not exceed 5 feet in height. The side of the furnace is of crimped galvanized iron casing and wrought iron base. Fig. 2 is a sectional view. It will be seen that the inventor has adopted some of the ideas embodied in the well-known Babcock & Wilcox boiler and adapted them for use in connection with hot air. The tubes shown are ordinary 2-inch boiler tubes, packed into cast iron sheets or heads at top and bottom. A steel back plate ¼ inch thick extends the length of the tubes, and with side plates of the same thickness, and the front, made of ½ steel plate and cast iron frame, practically incloses the furnace proper and makes a large combustion chamber. The remaining space within the casing is conveniently utilized for hot air chamber and dead air spaces. A smoke flue enters the back plate on a level with the fire door, the damper being operated from the front of the furnace by the rod with ring handle seen at the right of the fire door. The grate is constructed on the rocking principle, and by unshipping the lever and pulling out the rod it can be made to dump clinkers and ashes quickly and effectually. A thin steel plate laid over the cellar floor gives a smooth surface to the bottom of the ash pit. The fire box has a lining of fire brick 3 inches thick. Back of this fire brick lining on all sides is an air space which allows air entering the ash pit door to pass upward around the fire, thus mingling with the gases and increasing the efficiency of the combustion. In operation, cold air is taken

upward until reaching the top tube sheet, which is the hottest part of the combustion chamber, where it emerges

The necessity for improving harbor accommodations in order to suit the large modern steam vessels is pressing itself upon a number of the Atlantic ports. The city of Philadelphia is projecting some improvements in the harbor on the Delaware River, which will include among other features the construction of four piers of sufficient size to accommodate the largest ocean going steamers and ranging in width from 80 to 100 feet. Boston also is contemplating some extensive improvements in the docks in that

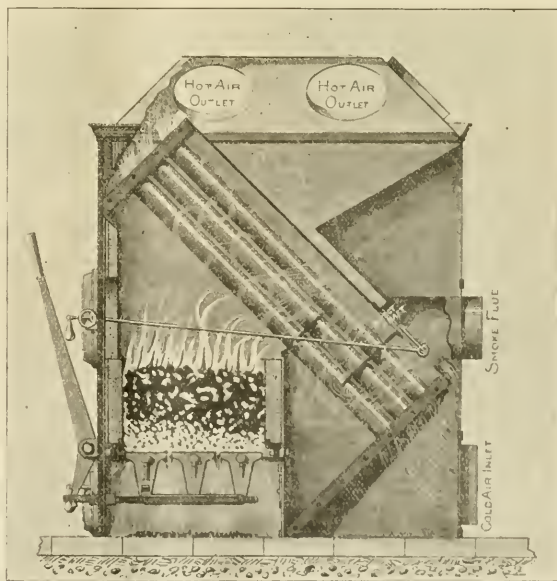


Fig. 2.—Sectional View.

into the hot air chamber. The makers lay much stress upon the fact that the hot air enters the service pipes immediately after receiving the greatest di-

city, to accomplish which from \$10,000,000 to \$15,000,000 will be required. This involves a new dock system at East Boston.

STOVE TRADE NOTES.

The Aqua Retort Heater.

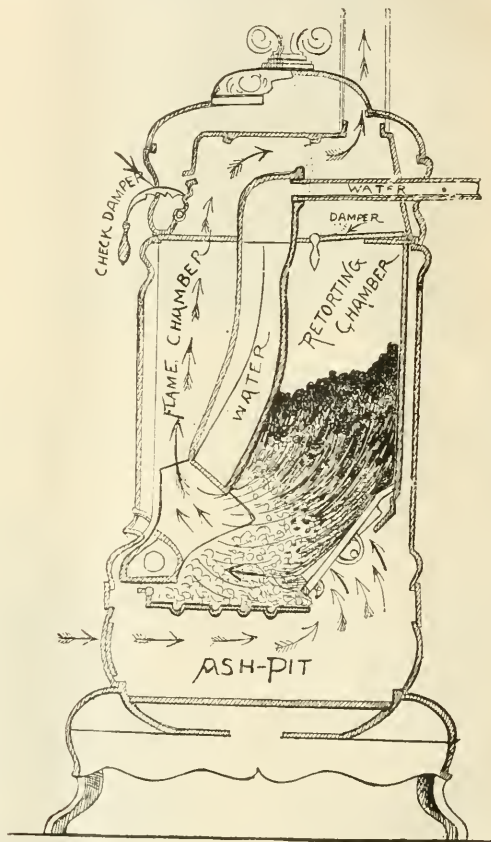
A very interesting line of heaters is being brought out by the Portsmouth Stove & Range Company of Portsmouth, Ohio. It covers two general classes, one known as the Ariel Retorts and the other as the Aqua Retorts. The former is a parlor heater, while the latter is a parlor heater with a hot water attachment. The trade will be interested in the sectional view of the latter which is presented herewith and which illustrates the internal construction and method of burning fuel in both classes of stoves. The hot water attachment is a chamber in the middle of the stove, as shown. The notable feature of the apparatus, however, lies in the method of burning the fuel, the stove being especially adapted for soft coal, slack, nut and other cheap fuels, the particular purpose of its design being for the use of Dakota lignite. The coal is put into the retorting chamber at the back of the stove, from where it gradually drops down as it burns away from the bottom. The draft enters below the fuel, returning through the grate, which is placed in a slanting position at the back, the flames being carried toward the front of the stove and up in front of the water chamber. The manufacturers point out that Dakota lignite requires a large volume of air for its perfect combustion and in this stove ample provision is made for regulating the supply and also checking the draft in case there is too strong a draft in the chimney. Special features of this stove are the mica frames on the outside of the door and the mica front, which gives a very large illumination. The principal regulation is done at the ash pit, where the entering air is controlled. A further control, however, is afforded by the check damper at the top of the flame chamber.

The Brand Stove Company

of Milwaukee, Wis., have issued from the press a catalogue of stoves, ranges, and heaters which is of a shape, style and make up differing somewhat from the average stove trade publication. It measures about 6½ x 9 inches and contains 112 pages bound in paper covers. The side title carries a pretty design, the central feature of which is the name and address of the company embossed in old gold upon a light blue ground. Another feature is a *fac-simile* of the company's trade-mark printed in the same colors. The first page of the publication contains the announcement that the entire product of the company, embracing ranges, cook stoves, heaters, furnaces and gas and oil burning constructions, will as a whole be known under the single term of "Brand's Famous," this general designation being prefixed to the individual name of each stove. The opening pages are devoted to illustrations of the company's works in 1868 and in 1895, prices, terms telegraphic code, directions for operating stoves and ranges, &c. Brand's Famous steel range, made of steel plate of a double thickness around the sides and back of the fire place; ventilated oven with removable bottom; steel oven door; fire box lined with cast or fire brick linings; large flues and warming closet provided

with patent revolving door which cannot get out of order, is given the leading place. Following this is Brand's Famous Edison six-hole range, for hard coal or wood, made with sheet flue, large oven, draw center or duplex grate, patent oven door opener and other features of utility and convenience. The Brand Famous Fireside range, made for all kinds of fuel and

Famous Crescent range, for soft coal or wood, was brought out in recognition of the need, especially in all sections where soft coal is used as the prevailing fuel, "of an article in whose construction the predominating elements would be size, durability, finish of workmanship, weight of exposed parts, ease of operation, economy of fuel and a due regard of exterior." A number



Sectional View of Aqua Retort Heater.

having four and six boiler holes, comes next in order. An interesting feature of this stove is its ornamentation, of cast scroll design, all visible parts being cleverly treated. Another peculiarity is the oven, which projects beyond the base, being well shaped and ventilated, while the oven door covers the entire side of the stove body. Other features are detachable pedal attachment, draw out drop hearth, duplex grate and interchangeable back which converts a square stove into a reservoir and *vice versa*. The oven top and the main bottom plates are ribbed and cemented, the damper and handle are detachable and the reservoir is flush. Brand's

of careful tests have been made by the company as to the relative cooking power and fuel consumption of this range, with very satisfactory results. The Crescent embodies the modern features and all sizes are adapted for hot water connections. Among the other goods shown may be mentioned the Goldbrand, a six-hole range adapted for hard coal or wood; the Dandy, a low priced six-hole range; the Fireside, made with both four and six holes and adapted for burning wood only, this being ornamented in the same manner and style as the coal range made under the same name and previously described, and the Gold Dust, a four-

hole range for wood only. The cook stoves are represented by the Fireside, Crescent, Chief and Gold Dust. The heaters occupy a number of pages which follow, being represented with Brand's Famous Aurora in the leading place. This is a handsome parlor heater of very neat design and embodying the latest improvements. Brand's Famous Art, Brand's Famous Brilliant and Brand's Famous Junior are adapted for burning hard coal and are offered in a variety of styles and sizes. A varied assortment of sheet iron cylinder surface burners, oak, laundry, cannon, cottage parlor and box stoves are also illustrated. Brand's Famous gas range improved for 1895 is described, as well as a line of hot plates, oil stoves and heaters and a line of warm air furnaces, including the Florida, Wisconsin, Comet and Magnet. An index to the telegraphic code, as well as a general index and blank pages for the purpose of memoranda, complete the catalogue.

Ventilation.

BY GEORGE PHILLIPS, VANCOUVER, B. C.

I notice with considerable interest the large amount of valuable space allotted weekly to the pros and cons of proper sanitary ventilation of public and private buildings, especially that of schools, and perhaps a few lines of what we are doing in this far off West in that direction may be found of some interest to the readers of *The Metal Worker*. As S. A. Heins adds remarks in *The Metal Worker* of June 1, one of the greatest drawbacks is the extra expense incurred when ventilation is considered, and you will often see, especially in the suburban and small districts, a crowded schoolroom, with a common stove to do the heating, and open, drafty windows the ventilation. Now, if those same windows would only take off the foul or carbonic acid laden air, which it is absolutely necessary to be rid of before we can properly ventilate, the case would be different. Instead of this the children are absorbing the poisonous air, while the fresher and more pure air is allowed to escape through the open windows, at the same time causing innumerable coughs and colds to their delicate systems. In my mind there is no subject in this advanced age of ours that has been more neglected.

This subject drew my serious attention some years ago, while engaged in the stove and furnace business, and daily observation has led me to believe that no better or cheaper method of ventilation has as yet been provided than the old open fire place, and the heat ordinarily wasted in the chimney can be largely utilized for supplying fresh air by placing a specially adapted and constructed air heating drum or chamber in the chimney above the fire place. It is a comparatively simple matter to arrange in the chimney an efficient means of checking the waste of heat and supplying a liberal amount of fresh warm air from the outside to take the place of the vitiated air, which is in the meantime being drawn away by the open fire place. We have the remedy for the whole difficulty in a nutshell, at a small cost of both fuel and introduction. To give an example of how far I have succeeded, I may mention one in particular, that of a ward in the City Hospital of Vancouver. The ward measures 57 feet long, 40 feet wide, with 13 feet 6 inches height of ceiling, or, in other words, containing 30,780 cubic feet of space. The whole is thoroughly heated and ventilated with one fire place, to the entire satisfaction of the management thereof, at a total cost of \$140 for apparatus.

I am now about to place the same system in one of our new schools. The contract is to thoroughly heat and ventilate the four classrooms (each containing 10,000 cubic feet of space) with two fire places, and as two of the classrooms are directly above the others, I use the fire place as a ventilator for the lower rooms, with an 8 x 12 register placed near the ceiling supplying the hot air, while in the upper rooms I place a 10 x 12 register in the same line of the fire place near the floor, which, in conjunction with an 8 x 12 register supplying hot air near the ceiling, causes the complete circulation for each room, at a total cost of \$212 for apparatus, with an after cost of much less fuel than either furnace or stoves, as well as giving a proper ventilation.

The Manufacturers' Stove Repair Company

have recently been incorporated and organized at Chicago for the purpose of making and selling repairs for all classes and grades of stoves. They have established their office, salesroom and warehouse at 2810 Logan street, immediately adjoining their foundry. It is not altogether a new enterprise, as the company succeeded to an established business, which gave them a large stock of patterns with which to make a start. They now have on hand patterns for the repairs for 10,000 stoves, and it is their purpose to add more as rapidly as possible. The members of the company are practical founders who have had long experience in the business, and who expect by close attention to all details and the introduction of the most systematic methods to put themselves in a position to handle a very large part of the stove repairing business of the West. Many manufacturers of stoves will doubtless find it to their advantage to order repairs from this company, who, by making a specialty of the business, can much more rapidly and easily furnish odd parts. The company have prepared order blanks which they will be pleased to furnish those who wish to order repairs. These blanks are of a character to indicate so specifically the kind of stove for which repairs are made that there is no possibility of errors, and the order will thus be certain to be filled exactly in accordance with the desire of the purchaser. The telephone address of the company is Canal 364. They are also dealers in fire brick, Rutland cement, crated cement, stove polish, door knobs, mica, dampers, &c.

The Bramhall Deane Company

of 262-266 Water street, New York City, have issued from the press an illustrated catalogue which is among the largest publications of the kind reaching our desk this season. It is an oblong volume measuring 94 x 134 inches, consists of nearly 200 pages of letterpress, and is bound in paper covers. In their introduction to the trade the company call attention to their complete assortment of culinary appliances, which is presented in the volume, and state that the most valuable improvements in this line have been introduced by them in the last 35 years, in which they have been engaged in the business. Reference is made to the special features which are constantly being added to their goods, all being in the direction of economy of fuel and durability. For a long time the company have manufactured their own brass work and have recently put in a nickel plating plant. An interesting feature of the volume is found on page 5, which shows an interior view of the kitchen

of the Holland House, New York, as furnished by the company. Deane's patent French range occupies a number of pages, it being made in several sizes adapted to meet requirements from the smallest up to the largest. The 6-foot range, having one fire and two ovens, is designed especially to meet the requirements of those wishing a stove with only one fire, yet having great oven capacity. One of the sizes having two ovens is made for burning wood as a fuel. Many additions have been made to this line of ranges, all of which are of first-class construction and substantial appearance. Instructions for setting Deane's patent French ranges, accompanied by sectional views showing how the work is done, form a feature which cannot fail to prove interesting to dealers generally. A line of yacht ranges and boilers, made in sizes from 2 feet long upward, is shown and a partial list of yachts using the company's goods is presented. There is also shown a view of the style of range which has been selected for the yacht "Defender," following which is a view of the pattern of range with which some of the United States cruisers are fitted. Among the additions to the company's assortment of goods is a new gas oven known as the Brilliant. This is made of heavy sheet steel, with polished wrought iron trimmings, and drip pan of heavy galvanized iron. A long line of chop house broilers, cooking ranges for hotels, portable ovens, oyster ranges, dining car ranges, portable French ranges for soft coal, and pastry ovens, a new laundry range with drying room equipment, laundry stoves, tailors' irons, water heaters and improved hot water apparatus for heating brooder houses accompanied by numerous testimonials, upright tubular boilers, as well as an extensive line of miscellaneous goods, such as tinware of various kinds, hollow ware, Dutch ovens, kitchen clocks, potato peelers, water sterilizing apparatus, plate warmers, carving tables, water urns, caldrons, oyster cookers, Imperial egg boilers with time cups, steam closets, cast iron steam jacket kettles, &c., are also presented. The closing pages of the catalogue are given up to cutters of different kinds, copper and lead molds, and a very comprehensive index alphabetically arranged. The volume gives evidence of a great deal of care in its preparation, and in connection with the various illustrations is to be found more or less descriptive text.

ODD PLATES.

THE Smith & Anthony Company of 48-54 Union street, Boston Mass., have brought out the Hub steel range, which is offered in several styles and sizes. This range embodies a number of interesting features, possessing large fire box, capacious oven, drop oven door and duplex grate. The latter can be readily withdrawn or replaced without disturbing the stove or removing a single plate or bolt. The material used in the construction of the body is cold rolled steel, asbestos lined throughout. The top is made of heavy cast iron cut in four sections. In the smallest size the oven measures 22 x 16 inches, in the next size 22 x 18 inches, and in the largest size 22 x 20 inches. The Hub is of neat appearance, being attractively decorated with nickel and polished iron. It is fitted with all the usual attachments, such as hot closet, shelves, and reservoir, water front, &c. The closet is very commodious and is easily reached through a rolling door.

NEW ATHENS FOUNDRY, New Athens, Ill., are sending to the trade illustrated circulars describing their New Pearl heater for wood. This stove is referred to as being of the very latest

design and pattern, and the sales already made are mentioned as being phenomenally large. The circular contains a sectional view of the stove, showing the interior construction and its method of heating. It will burn anything, from light shavings to the heaviest wood, and will keep fire over night. This company are also sending out a large circular containing engravings and description of some of the goods which they manufacture. Prominent among them we notice the Challenge range for coal or wood, made in four sizes, either plain or with bracket reservoir, or reservoir and hot closet. Engravings are also shown of Our Charm, New Princess and Okaw, all of which are adapted for coal or wood. The Excelsior, for wood only, is a neatly designed cook stove, made in four sizes. A few of the heating stoves shown are as follows: Grit Oak, a low priced oak stove; Okaw, a medium priced cannon stove; Okaw, box stove of recent design, and a full assortment of laundry stoves.

The Bellaire Stove Company, Bellaire, Ohio, will soon have ready for the trade a neat booklet, directing attention to their new Star air tight heater, for which many points of excellence are claimed. It is the intention of the company to give this booklet wide distribution, and it is suggested by them that dealers do not place their contracts until they are fully acquainted with the merits of this new heater.

The Portsmouth Stove & Range Company of Portsmouth, Ohio, have brought out a very attractive parlor heater, known as the Ariel Retort. It is intended for burning soft coal, and is referred to by the manufacturers as having the largest mica illumination ever put in a construction of this kind. The stove has large radiating surface, is powerful in operation, and so made that it is said to be impossible for gas to escape into the room. The combustion is referred to as being entirely satisfactory, the fire being uniform and continuous, and the flues not becoming clogged.

The Buckwalter Stove Company of Royersford, Pa., and with sales agents in Philadelphia, Chicago and Baltimore, are making the Colossus full reversible flue base burner in three sizes with 11, 13 and 15 inch fire pots. This stove is of neat and attractive ornamentation, and is offered both as a single and double heater. The company are also inviting attention to their Art Ringgold, a medium price base burner with either straight draft or full reversible flue. Either style is made in three sizes with 10, 12 and 14 inch fire pots. These two heaters are referred to as embodying all the desirable features, and as being first class in every respect. The catalogue which the company have issued contains illustrations and full descriptive particulars.

A SUIT was brought last week in the Circuit Court at Springfield, Mo., in which is involved the title to the plant of the Springfield Stove Works, at that city. The suit was instituted by George H. Sease and other citizens who had subscribed for the building of the foundry, and they asked that the property be reconveyed to them on the ground that the company had failed to comply with the terms of the contract respecting the number of hands to be employed. According to reports in the local papers the people of Springfield bought the old cotton mill plant east of the Phelps avenue depot, and conveyed it to the stove company with an agreement that the factory should be operated continuously for five years, and that the force employed should at no time fall below 50 molders and 100 men in the aggregate. W. W. Baldwin, who

received the bonus to construct the works, testified in part that the necessary workmen could not be found to make good the promise of the company in the particular named. Able counsel were employed in the case, which, up to the latest advices, had not been decided.

The Ridgway Furnace Company of 6 Portland street, Boston, Mass., have issued a 48-page pamphlet neatly printed on good paper and bound in paper covers containing records of some of the results obtained by the Ridgway revolving open fire pot heater. This furnace is described somewhat in detail, the text being accompanied by broken views of the heater showing the general arrangement of parts. There are also given tables of dimensions covering the various sizes in which the heater is made. The bulk of the matter, however, is in the nature of testimonial letters from some of those who have used the company's goods. There is also a long list of names and addresses which are offered as references in the same connection. The Ridgway furnace is referred to as a powerful heater, economical, easily handled and simple in construction.

The Foster Stove Works of Ironton, Ohio, propose to open, July 4, a branch in Louisville, Ky., with L. E. Marting, secretary of the company, in charge. A building 25 x 80 feet in size and three stories and basement in height has been rented for the purpose, and during the past week shipments of stoves have been made to stock the new house. The branch will be made a distributing point for the Southern and Western trade, and is established in the interests of an expansion of business.

The Champion Steel Range Company of Cleveland, Ohio, have appointed the Chicago Stove & Range Company, Chicago, Ill., agents for the Western States.

The Fischer-Leaf Company of Louisville, Ky., are very busy at their foundry, and week before last they shipped five carloads of stoves into the State of Texas. Last week they sent forward ten more cars loaded with stoves, grates, mantels and fancy articles. The present rush is caused by prospective advances in freight rates, but the company are also preparing for a good fall trade.

The Chicago office of the Peninsular Stove Company inform us that they have just made a shipment of Peninsular wrought steel ranges to Valangin près Neuchatel, Switzerland.

J. S. STANBROUGH of Oswego, N. Y., has issued a directory of stoves and ranges which he has sold in Oswego and vicinity. The pamphlet contains among the early pages illustrations, with brief descriptive particulars, of the P. P. Stewart and Eastern Stewart ranges, having patent oval fire box and interchangeable draw center, triangular or dock ash grates. The ovens are of large size, well shaped and thoroughly ventilated, while the ornamentation is of an attractive character. There is also shown the Splendid Stewart square parlor heater, arranged for burning anthracite coal. It is made in three sizes and fitted with duplex grate. The pages which follow are given up to an alphabetical list of some of the people in Oswego and vicinity who are using these stoves and ranges made by the Fuller & Warren Company.

GIBLIN & Co., Utica, N. Y., favor us with a copy of an illustrated circular which has just been issued relating to the Standard steel furnace. The heater is illustrated by means of a

broken view showing the internal arrangement of parts and accompanied by full description and table of dimensions showing the sizes of fire pots, radiators, casings, &c., of the various sizes in which the Standard is made. The heater is intended for using coal, wood or gas, and is referred to as being low in height and in price; quick in operation and powerful in construction.

G. D. FERRIS, 813 North Twenty-first street, St. Louis, Mo., is offering the trade what is known as the Queen heater, arranged to burn wood or coal. The Queen is made this year a trifle larger at the bottom, which is said to improve its appearance and enables a number of the bodies to be nested together. An edge is turned on the bottom of the stove body as well as on the stove bottom, so that any one can slip the bottom on and hammer and edge down in a few minutes. It is stated that six stoves will nest together, thus effecting a large saving in the cost of transportation, while there is less danger of damage in transit.

The Somerset Stove Foundry Company of Somerset, Mass., are bringing out the patterns for nine parlor heaters to meet the requirements of their growing trade. The patterns include three sizes of the Somerset Grand parlor, a first-class construction in every respect, combining with the good qualities of the renowned new Somerset and Arion parlors the very latest improvements. These will be followed by three sizes direct draft, as well as the same number indirect draft, and will be known as the Somerset Jewel. The company will also place on the market a new range which will represent their best efforts, and which, with their present lines, will give them an assortment of goods well adapted to the requirements of the New England trade.

The Jackes-Evans Mfg. Company, St. Louis, Mo., issue a circular illustrating their Acme and Crown wood heaters. The Acme is made with Russia iron body, with heavy steel lining, and has a swing cover which it is unnecessary to remove when putting in fuel. The stove also has a cast swing damper door for the easy removal of ashes with an ordinary fire shovel and a cast pipe collar which adds to the strength and durability of the stove. The design and construction of the damper on the Acme are patented. One size of the Crown heater is 29 1/2 inches long, 16 inches wide and 20 inches high, having a body of Russia iron with steel lining. The other size is 25 inches long, 15 inches wide and 18 inches high, the body being of Wood's smooth steel, and in other respects similar to the stove just described.

J. ELWOOD YEAGER, 56 North Second street, Philadelphia, is sending to the stove trade a blank for ordering stove repairs, leaving space for the name of the manufacturer, number and name of stove, and the date and style of grate. Stamped on the blank is the notice, "Do not order repairs for different stoves on the same blank."

AN interesting match game of baseball will be played at the country seat of W. McDowell, secretary of the Liebrandt & McDowell Stove Company, Philadelphia, at Narberth, Pa., on Saturday afternoon, between teams from the stove houses of J. Elwood Yeager, captained by Mr. Yeager, and F. M. Borden & Bro., captained by W. F. Habicht. It is expected that a large delegation from the Philadelphia stove trade will visit Narberth to witness the encounter. The game will be umpired by Adolph Grant of the stove and furnace house of Adolph Grant & Co., 1901 Germantown avenue, Philadelphia.

The Magee Furnace Company, Boston, Mass., have decided to close out their branch houses in Chicago and New York, and, we understand, are prepared to negotiate for the agencies of their various manufactures in these cities, with or without stock of goods, lease, &c., now on hand. They mention that business has been successfully carried on at these points for the past 30 years or more, and their offer gives an excellent opportunity for any one desiring to start in business or add to an already established trade.

FRED. W. GARDNER, the Western manager of the Michigan Stove Company, received a visit the other day at Chicago from Senator A. T. Stebbins of Rochester, Minn., who has been his patron for over 20 years. Senator Stebbins was on his way to Cleveland as a delegate to the convention of the National League of Republican Clubs. He had been a member of the House of Representatives of Minnesota for some time, and last year was elected to the Senate by an overwhelming majority, which was a pleasant index of his popularity in that section.

The New York Nickel Plating Company, 229 West Twenty-ninth street, New York, are placing on the market a new stove knob which they call the Always Cold, which is made of malleable iron. The knob is made as a cored casting and is very light in weight. It is constructed to permit a free circulation of air to prevent its being heated to a high temperature. In addition to manufacturing these goods, they make a line of solid cast knobs, hinge pin tips and draft slide knobs. They also have a well equipped machine shop for light manufacture, and at the present time are engaged in making a slot machine for the sale of perfumes. A large portion of their business is nickel plating for their customers. They have been busily engaged during the last few months, and have increased their capacity, having added 350 gallons of nickel solution and 700 gallons of copper and brass solution to their plant. They occupy three floors of the building, which is 40 x 100 feet, using the first floor for an office and solution tanks, and the upper floors for machine shop, polishing and finishing rooms. They also manufacture for special customers a line of nickel plated castings, one of the features of this branch of their business being the superior finish and softness of the castings which they furnish.

The Manufacturers' Stove Repair Company, 2810 Logan street, Chicago, are sole agents for Perry & Co. of Albany, N. Y., and carry a full line of their original repairs in stock.

NOTICE has been given that an application will be made July 16 to incorporate the Charles R. Sayre Company of Montrose, Pa., formed for the purpose of manufacturing hot air furnaces, feed steamers, house furnishing goods, &c. The incorporators will be Charles R. Sayre, Daniel Sayre, W. D. Lusk, Franklin Lusk and Searle McCollum.

TRADE NOTES.

The Steel Edge Stamping & Retining Company's works, at Millis, Mass., have been sold at auction to John S. Folsom for \$26,000.

The American Novelty Mfg. Company, to manufacture metal goods in Brooklyn, have been incorporated, with a capital of \$4000. The directors are Charles Hart, James Denehan and Edward C. Kruz, of Brooklyn.

The proprietors of the National Galvanizing Works, McKeesport, Pa., are considering the advisability of removing their plant to Glassport, on the

McKeesport & Bellevue Railroad, where they have been offered a free site. The reason for the projected move is the enforced enlargement of their plant in order to meet their growing business, and the difficulty in obtaining suitable ground at McKeesport.

The American Sheet Iron Works of Phillipsburg, Pa., have made an advance of 10 per cent. in the wages of their employees, taking effect July 1.

The McKeesport Iron Works, of the W. Dewees Wood Company, McKeesport, Pa., are being operated full time in all departments, the firm having a large number of orders on hand.

W. R. OSTRANDER & Co., 204 Fulton street, New York, issue a revised catalogue. The book contains 191 pages and relates to Speaking Tubes, Electric Call Bells, Electric Burglar Alarms, Electric Lighting, Electric Gas Lighting, Electric Fan Motors, Electric Specialties, Watchman's Clocks, Telephones, Telegraph Supplies, Mechanical Door Bells, Pneumatic Call Bells, &c. The illustrated catalogue and price-list contains a complete list of the company's manufactures.

HEATING & PLUMBING.

NEW WORK AND CONTRACTS.

The Connecticut Legislature has authorized the expenditure of \$2500 for the heating and ventilation of the Normal School Building at New Britain.

Geo. Mahl, Hartford, Conn., is doing the plumbing in an \$8000 residence for A. I. Jacobs.

The Pawtucket Steam & Gas Pipe Company, Pawtucket, R. I., bid \$1500 and secured the contract for heating and plumbing the new High School.

Councilman Dahlborg, Brockton, Mass., has the contract for plumbing Edwin Keith's cottage at Monument Beach.

G. M. Rossmann, Keene, N. H., is putting a steam heating apparatus in F. K. Burnham's house.

The Building Committee of the Board of Supervisors of Linn County, Iowa, at Cedar Rapids, were authorized to make contracts for the erection of a suitable building for water closets and also for heating the county buildings with steam.

W. H. Bryan, chosen by Architect Mann to select a heating system for the new City Hall, St. Louis, reported to the new City Hall Commission in favor of the indirect hot blast system in rooms much frequented and the radiation system in others.

Spriggs, Black & Co., Grand Forks, N. Dak., have the contract for the steam heating apparatus to be placed at the Garfield Roller Mills, at Fertile.

Gray, Rippey & Suter, Sedalia, Mo., have the contract for putting in a steam heater at Baird College, at Clinton. This, it is said, will be one of the largest and most complete heating systems in Central Missouri.

The George A. Underwood Company of Boston have the contract for the heating and ventilating of the Northend School, at New Britain, Conn.

Peter Leudroth, New Haven, Conn., will build two store buildings that will be heated with hot water.

The G. W. Hazel Company, New Haven, Conn., will do the plumbing and heating in the new residence of Frank Cowee.

O. S. Wright, New Haven, Conn., has the plumbing contract for the new house of J. Dickinson.

J. J. Hugin, New Haven, Conn., has the contract for plumbing the new house of J. Wahrreuberger.

The heating and plumbing contracts have not been let for the house of M. Foote, New Haven, Conn.

The heating and plumbing contracts have not been let for the new house of Thomas L. Scott, Bridgeport, Conn.

Sheahan & Groark, New Haven, Conn., have been awarded the contract for the

heating of the new Christ Church and for the Winchester School Building.

The Smith & Anthony Company, Boston, Mass., secured the contract for heating and ventilating the school at Northampton, Mass., at \$4974.

The School Committee of Manchester, N. H., awarded the contract for heating the Straw School to the Underhill Warming & Ventilating Company, Boston, and for the Wilson School to the Fuller & Warren Company, Boston.

The Idaho Plumbing & Heating Company, Boise, Idaho, have just received a contract for heating a new business block for Peter Sanna, in which they will use 3400 feet of Perfection radiation.

Sealed proposals will be received at the office of the Supervising Architect, Washington, D. C., until July 16, for a low pressure return circulation on steam heating and ventilating apparatus at the United States Post Office Building, at York, Pa. Drawings and specifications may be had from the Supervising Architect, Washington, or at the office of the superintendent at York.

C. A. Middlemas was awarded the contract for the plumbing and Washburn & Garfield were awarded the contract for the steam heating in the new surgical ward of the City Hospital, at Worcester, Mass.

At the town meeting of Westborough, Mass., \$3800 was voted for making alterations in the heating and ventilation of two school houses.

The contract for plumbing the St. Jean Hall was given to P. J. Liddy, Meriden, Conn.

T. J. Sanford, 5238 State street, Chicago, is to do the plumbing and drainage in the flat building of Max Alter, Forestville avenue and Forty-ninth street.

J. Murphy, 6805 South Halsted street, Chicago, is to do the plumbing and drainage in the residence of J. B. Thomas, 4364 Emerald avenue.

J. A. Johnston, 4706 Cottage Grove avenue, Chicago, has the contract for the plumbing and drainage in the residence of E. C. Morton, Union and Sixty-eighth streets.

J. R. Hayes, 423 State street, Chicago, is to do the plumbing and drainage in the residence of G. F. Orado, 2250 La Salle street.

William S. Verity, 229 West Randolph street, Chicago, has the contract for the plumbing and drainage in the residence of Samuel Brown, North Western avenue and Wilson street.

P. C. Desmond, 938 West Lake street, Chicago, is to do the plumbing and drainage in the flat building of J. Healey, 1054 West Madison street.

Park Bros., 79 Dearborn street, Chicago, have the contract for the plumbing and drainage in the flat building of J. Oleson, 86 Nebraska street.

Charles C. Breyer, 187 West Division street, Chicago, is to do the plumbing and drainage in the flat building of S. Samuels, 76 Potomac avenue.

Becker & Schirra, 643 Sedgwick street, Chicago, have the contract for the plumbing and drainage in the flat building of Otto Janneman, 648 Orchard street.

L. R. Bain & Co., 633 West Madison street, Chicago, are to do the plumbing and drainage in the flat building of George S. Ballard, Kedzie avenue and Harrison street.

Keefe & Warnock, 1105 Lincoln avenue, Chicago, have the contract for the plumbing and drainage in the two store and flat building of P. O'Connell, 406 and 408 Belmont avenue.

R. T. Ward, 1487 West Harrison street, Chicago, has the contract for the plumbing and drainage in the two flat buildings of H. H. Lamson, Kedzie avenue and Nineteenth street.

Hanley & Cassey, 21 Quincy street, Chicago, are to do the plumbing and drainage in the flat building of S. H. Taylor, 291 Dearborn avenue.

M. J. Lyons, 720 Forty-third street, Chicago, has the contract for the plumbing and drainage in the flat building of M. Foley, Forty-second and Sherman streets.

TRADE REPORT.

The Iron Market.

The upward course of prices has been emphasized by the advance of \$2 per ton on Steel Rails. This is partly due to the rise in Raw Materials and partly to the increased demand. Thus far, however, the Western mills have been the beneficiaries of the improvement in the demand. The Eastern manufacturers are awaiting the overflow. Billets have been marked up to \$20 to \$20.50 in the Pittsburgh district. Advances have also been scored in Wrought Pipes and Tubes.

Pittsburgh advices state that Coke prices seem to have settled down to \$1.25 per ton at oven, with reports current of offers to sell at \$1.15. An advance in coal miners' wages, now considered probable, would, however, advance the price of Coke smartly in accordance with the labor clause in all Coke contracts recently made.

It is decidedly reassuring to learn that labor troubles are not apprehended in the Western rolling mills on July 1. The Sheet and Tin Plate scales have been arranged to the satisfaction of all parties concerned, and the Bar scale is expected to go through without much friction. Business is too active to permit any interruptions such as might arise through labor troubles.

Pig Iron.—Consumers in the New York market are more thoroughly realizing the strength of the situation, and consequently transactions are larger. They have not yet overcome their disposition to shop, however, and are not quick to close contracts, but sellers are gratified to find them sending in orders after having declared their ability to do better elsewhere. Prices are not only firmly held, but sales of favorite brands have been made at rates above our quotations, which are as follows for the general market: Northern brands, No. 1, \$1.13; No. 2, \$1.12; No. 2 Plain, \$1.10 to \$1.15; all tidewater delivery. Southern brands, same delivery, are quoted at \$12.50 to \$12.75 for No. 1; \$12 to \$12.25 for No. 2; \$11.50 to \$11.75 for No. 3; \$12 to \$12.25 for No. 1 soft; \$11.75 to \$12 for No. 2 soft; \$11.25 to \$11.50 for Foundry Forge, or No. 4.

Advices from Philadelphia indicate that without any official announcement of an advance in prices the Pig Iron market is gradually working toward higher figures, and buyers would have to pay a little more money than a week ago. Foundry grades command \$11.50 for No. 2 Plain, \$12 for No. 2 X, and \$13 for No. 1 X. Some hold for still higher prices, and as the demand is in excess of the supply there is a fair probability that they will realize all that they ask. The demand is uniformly good, and taking everything into account prospects are of the most encouraging character. General quotations are about as follows for Philadelphia delivery and very close to the same figures at interior points:

Standard No. 1 Foundry X.....	\$12.75 to \$13.25
Standard No. 2 Foundry X.....	\$11.75 to 12.00
No. 2 Plain.....	to 11.50

Sales of Pig Iron in the Chicago market during the week do not aggregate the tonnage of the previous week, but the market cannot be called dull. The demand for local

Coke Irons in lots of 100 tons and one sale of 5000 tons exceeded the expectations of the greatest enthusiast of the upward move in prices. The advance last made on Coke Irons has been a stimulant to the Charcoal trade. Furnacemen claim a shortage in the supply of No. 1 Coke Foundry and somewhat that they are sold up to the end of the year on this grade. Southern furnace agents report an increasing demand for Softeners and an advance of 50c. per ton on some special brands. Indications are very favorable for continued activity. Quotations are as follows, for cash:

Lake Superior Charcoal.....	\$13.00 to \$13.50
Local Coke Foundry, No. 1.....	11.50 to 12.00
Local Coke Foundry, No. 2.....	11.25 to 11.50
Local Coke Foundry, No. 3.....	10.75 to 11.00
Local Scotch No. 1.....	11.50 to 12.00
Ohio Strong Softeners, No. 1.....	12.75 to 13.25
Southern Silvery, No. 1.....	12.75 to 13.25
Southern Silvery, No. 2.....	12.25 to 12.75
Southern Coke, No. 2.....	11.50 to 11.75
Southern Coke, No. 3.....	11.25 to 11.50
Southern, No. 1 Soft.....	11.50 to 11.75
Southern, No. 2 Soft.....	11.25 to 11.50
Alabama Car Wheel.....	16.00 to 17.00
Jackson County Silvery.....	13.00 to 15.50
Other Ohio Silvery.....	14.25 to 14.50

In the Pittsburgh district Bessemer Pig Iron is fully as strong as at any time since prices began going up. Sales during the week have been large. Foundry Iron, however, has not responded to the higher prices or heavy demand for other grades. Quotations are as follows, for cash:

No. 1 Foundry.....	\$12.50 to \$12.75
No. 2 Foundry.....	11.75 to 12.00

Less excitement has attended the purchase of Pig Iron in the Cincinnati district during the past week and the aggregate sales are not so large, but the market has lost nothing in tone; in fact, Southern furnaces have been debating the advisability of another advance, but a conference with sales agents seems to have convinced them that for the time being such a step would tend to unsettle rather than improve the situation. The large buyers who have been in the market recently have been anxious to purchase for as long deliveries as possible, and instances are noted where contracts have been placed even for the entire year, but at an advance of 25c. per ton over the present established prices. It is stated that a block of 30,000 tons of various kinds of Iron, mainly Foundry grades, held by a Northern furnace, has been sold recently, thus relieving the market of a heavy load. Quotations are given as follows:

Southern Coke, No. 1.....	\$11.00
Southern Coke, No. 2.....	10.50
Southern Coke, No. 3.....	10.25
Southern Coke, No. 1 Soft.....	10.50
Southern Coke, No. 2 Soft.....	10.25
Ohio Soft Stone Coal, No. 1.....	\$14.50 to 15.00
Ohio Soft Stone Coal, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 1.....	12.50
Lake Superior Coke, No. 2.....	10.75 to 11.50
Tennessee Charcoal, No. 1.....	14.00 to 14.25
Tennessee Charcoal, No. 2.....	13.00 to 13.50

The situation in the Pig Iron trade at St. Louis is reported as continuing to show steady improvement, and a heavy business is noted at the recent advance. Consumers who deferred purchasing their supplies in anticipation of a lower market have about concluded that there is no possibility of a reaction in prices and have accordingly entered the market, and are now assisting to maintain the recent advance by their purchases. Information from the

Southern furnaces induces the belief that another advance of 50c. per ton will take place shortly after July 1, so that it would seem like good policy for consumers to fill their wants at the present prices. The local consumers of Iron are all full of work, and there are enough inquiries on the market to lead them to anticipate a steady trade during the balance of the year. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$11.50 to \$11.75
Southern Coke, No. 2 Foundry.....	11.00 to 11.25
Southern Coke, No. 3 Foundry.....	10.75 to 11.00
No. 1 Soft.....	11.00 to 11.25
No. 2 Soft.....	10.75 to 11.00

Metal Market

Pig Tin.—Speculation has been very slow the past week, and wholesale prices have fluctuated within narrow limits. In other words, it has been a feeble sea-saw sort of market, with net results too small to afford either "bulls" or "bears" a great deal of satisfaction. As far as the general situation is concerned there is no decided change. Consumption is good in this country and in Europe. Supplies are unusually heavy, and not a small part of the 10,000 tons or more lying in London is in speculators' hands, while the fresh supplies coming out from primary points are nearly, if not quite, equal to the world's consumption. At all events such has been the case this year up to the present time. Retail business shows considerable improvement. Small lots of Straits Pig from store are quoted at 15½c. to 15¾c. per lb.

Copper.—The market has changed somewhat for the better. The wholesale price for spot material stands higher than it did a week or two ago. This turn was brought about in part by announcement of the fact that a large block of Calumet and Hecla Copper has been taken for export at an advance of 4c. per lb. and that the company have raised their quotation to 11c. Electrolytic and Casting Copper have also improved in price and more business is reported. Jobbers' price for Lake Ingot in moderate sized lots is 11c. to 11¼c., and for G. M. B., 10¼c. to 10½c. per lb.

Sheet Copper.—The improvement in the demand for Manufactured Copper continues. Inquiry is good, and the volume of orders, although individually not very large, makes a good showing in the aggregate. Some considerable contracts for Cornice Copper are pending in this city. All the mills are busy on orders. The price-list on Manufactured Copper has not yet been advanced by the manufacturers, but some action in this direction is considered likely to be taken before long. Small lots of Sheet Copper from store are quoted at 14c. per lb. basis net.

Pig Lead.—Prices have remained almost stationary throughout the week, and business has been unusually slow for this season of the year. The general situation is practically as outlined last week—that is, statistically good in the West but more uncertain nearer this city and complicated by weakness in the London market that obstructs export business to greater or less extent. The price of American Pig in small

lots from store still stands at 3½c. to 3¾c. Bar Lead is quoted by jobbers at 4½c. to 4¼c. per lb.

Lead Pipe and Sheet.—A very fair business is being done in Manufactured Lead. As compared with the same period of last year, the number and extent of orders for Lead Pipe and Sheet show a considerable increase, and have been sufficient to keep manufacturers busy. Still, the volume is hardly up to expectations, nor do prices show the upward tendency which was anticipated, although they are stiffer in every line of Manufactured Lead. The outlook is regarded as favorable for an excellent volume of business in the coming fall. Lead Pipe in small quantities from store is firmly held at the list price of 5½c., and Sheet Lead at 6½c., subject to the usual discount.

Spelter.—The market shows more strength. Demand, while not extraordinarily liberal, has been more free, and prices are firmer. Galvanizing works are all very busy and their requirements are calculated to be large and growing for some time to come. Good Western brands, in small lots, are quoted at 4c. to 4¼c.

Sheet Zinc.—The demand for this material continues active and stocks are still rather light. Prices are well maintained. For 600 lb. casks, jobbers ask 6½c., and for broken lots, 7c. per lb.

Antimony.—Dealings have been moderate and prices remain fairly steady. Quotations for small parcels are 9c. for Cookson's and 8c. for Hallett's.

Nickel.—Sellers' quotations are 35c. to 37½c., according to quantity and terms.

Tin Plate.—While not quite as brisk as during last week, the demand for Coke Tin for future delivery has continued fairly large, with evidences of still further expansion. Prices are exceedingly firm, and for immediate deliveries, to fill absolute requirements, an advance of 5c. to 10c. a box is often asked and given. The price of ordinary Cokes now stands 15c. to 20c. a box higher than the recent lowest figures. The late heavy run on these Plates is attributed to delays on deliveries under old contracts, causing canners to go outside for enough material to fill their urgent needs. Stocks of both foreign and domestic Cokes are by no means full, nor does there seem much prospect of any material change in this respect in the near future. Domestic works are already crowded on contracts reaching to the early fall, and the Welsh mills appear more than likely to be seriously crippled in their operations by labor troubles after July 1. Foreign and American Plates are now selling at almost precisely the same terms, and consumers, as a whole, display little or no preference as to which class of Plates they use. American makers, being sold considerably ahead, refuse future delivery orders, except at a higher range of prices, in all lines of Plates. The demand for Roofing Plate is rather slack at the moment; but this branch of the market is likely to develop more strength later, as buildings now in course of construction are further advanced. A London cable dispatch of June 26 to *The Iron Age* reports on the British Tin Plate market as follows:

Tin Plate continues strong, and there is still a good business on the 9s. 6d. basis for Bessemer Cokes. Buyers have shown eagerness to place orders. Several makers have withdrawn quotations from fear of stoppage of works next month, owing to attitude of the leaders of the workmen. Meanwhile more works are being restarted in some districts on oil

sizes for America. Quotations, f.o.b. Wales, are as follows:

Bessemer Cokes, 10 14 x 20, 9s. 6d. to 9s. 7½d.
Siemens Cokes, 10 14 x 20, 9s. 9d. to 9s. 10½d.
Ternes, 20 x 28, 18s. to 22s. 6d.
Carbons, 10 14 x 20, 11s. to 13s. 6d.

Black Plate for tinning is strong at £7. 10s. for Bessemer and £7. 12s. 6d. for Siemens, f.o.b. Wales, and in good demand.

Sheet Iron.—The arrangement of the Sheet scale has given added strength to the market for Black and Galvanized Sheets. Mills continue very busy, and some are entirely out of the market for the time. Some jobbers who placed their orders when prices were very much lower than they are now are said to be offering Sheets at lower prices than the mills will accept. Nevertheless, the range of the market is higher and prices distinctly firmer. Galvanized Sheets are in very heavy demand, and can hardly be had for prompt delivery at any price. Small or moderate sized quantities of Galvanized Sheets from store are quoted at 70 per cent. off. No. 27 Common Iron in small lots rules at 3c. per lb. Black Plates for tinning purposes are firmer in price, and prompt shipments of this material are as difficult to obtain as are those for other descriptions of Sheet Iron.

Chicago Report.

Scrap.—Stocks are coming in very slowly and do not accumulate. Prices offered are about top price that can be paid for unsorted lots. Their buying prices are as follows, Chicago delivery:

	Per net ton.	Per lb.
No. 1 Wrought Scrap.....	\$3.50	.....
Machinery Cast.....	6.50	.....
Malleable Cast.....	7.00	.....
Stove Plate (free of burnt)...	4.50	.....
Burnt Iron and Grate Bars...	2.50	.....
Sheet Iron and Hoops.....	2.50	.....
Plow Steel and Breaking		
Stock.....	4.40	.....
No. 2, such as Shovels, Hoes,		
&c.....	3.00	.....
Old Boilers—whole (Iron)...	4.00	.....
" (Iron)—cut in single		
Sheets and Rings.....	6.50	.....
Old Gas-Pipe and Boiler		
Tubes.....	6.00	6.50
Cast Borings.....	4.40	.....
Turnings.....	5.50	.....
Horseshoes.....	8.50	9.00
Copper Wire and Heavy.....	8½¢	.....
Copper Bottoms.....	7½¢	.....
Copper Clips.....	7½¢	.....
Red Brass.....	6½¢	.....
Yellow Brass.....	5½¢	.....
Light Brass.....	4½¢	.....
Pipe Lead.....	8½¢	.....
Tea Lead.....	2¢	.....
Zinc.....	2½¢	.....
Rubber.....	4¢	.....

Anthracite.—Market exceedingly quiet. Buyers waiting further decline before purchasing large supplies. Carload lots of 12 net tons or over are quoted as follows:

	Egg, Sto.	Grate, and Ch.
Chicago, Ill.....	\$4.60	\$4.75
Milwaukee, Wis.....	4.60	4.75
Kansas City, Mo.....	7.80	7.95
Council Bluffs, Iowa.....	7.80	7.95
Lincoln, Neb.....	7.95	8.10
Sioux City, Iowa.....	7.80	7.95
Aberdeen, S. Dak.....	7.85	8.00
Dubuque, Iowa.....	5.90	6.05
Madison, Wis.....	6.10	6.25
S. Paul, Minn.....	7.10	7.25
Burlington, Iowa.....	6.10	6.25
Des Moines, Iowa.....	7.60	7.75
Davenport, Iowa.....	5.90	6.05
St. Joseph, Mo.....	7.80	7.95
Leavenworth, Kan.....	7.80	7.95
Omaha, Neb.....	7.80	7.95

Colorado Anthracite

	Grate, and Ch.
COLORADO FUEL & IRON COMPANY.	
Denver.....	\$8.00
Fuelito.....	8.00
Colorado Springs.....	8.00
Leadville.....	8.00
Cheyenne, Wyo.....	10.00
All points between Denver and	
Missouri River.....	8.85

CONDITION OF THE

Hardware Trade.

THE end of June approaches with an excellent feeling in the market, many heavy goods having a strong tone on account of the increased cost of the raw material. The rapid advance which has taken place in Wire and Cut Nails is perhaps the principal feature of the market, but in other lines there has also been a considerable advance in prices. The time of the year having come when travelers are being withdrawn from the road, there is naturally a falling off in business; but notwithstanding this fact there is a good deal of activity, and many buyers, large and small, are disposed to place orders earlier and more freely than usual. In the general line of Shelf Hardware there has been as yet but little improvement in the matter of prices, the demand not having yet reached its normal volume, and the increased cost of raw material not adding materially to the cost of the goods. In many of these lines there is very active competition, and prices are very low. The coming month is looked forward to with much interest as likely to test the market, and if the prices ruling for Iron are maintained it is probable that the whole market will be characterized by a decidedly better tone.

Advices from Chicago.—Business continues very brisk for the middle of June. Jobbers are having an exceptional demand for all kinds of goods, many of which are not usually sold until later in the season. This is attributed to the advance in price that has been made on special lines, such as Nails, Barb Wire, Sheet Iron, &c., and the probability that before many more weeks have passed manufacturers of all lines of metal goods will make corresponding advances. Jobbers in the last 30 days have held closer to their schedule prices than at any time in the past two years. The whole line of Heavy Hardware is firm, and on some grades of Bolts, Nuts, Washers, &c., inside prices have been withdrawn.

Notes on Prices.

Wire Nails.—New and advanced prices were determined on by the manufacturers who were in session when we went to press last week. These prices, while ostensibly intended for July, went into effect at once, inasmuch as the mills had reached their capacity for June delivery. Two days were occupied in the deliberations of the manufacturers, and several important questions were considered. The following are the prices determined on by the meeting and now in force: Carload lots, or mixed cars, \$1.55 per keg, base, f.o.b. Pittsburgh; less than carload lots, \$1.65 per keg, base, f.o.b. Pittsburgh. On direct shipments on contracts in less than car lots of 24,000 pounds of Nails an extra 5 cents per 100 pounds will be charged. To jobbers taking of one mill within one calendar month 1000 kegs and over 5 cents per keg rebate will be allowed. An advance of about 10 per cent. was also made in the price of miscellaneous Nails. It was decided not to sell to syndicate buyers, and action was also taken to strengthen the position of the associated manufacturers and to secure a general maintenance of prices. Notwithstanding the heavy advance made in prices the demand is active, and it is thought that very soon the leading mills will have sold all the Nails they can turn out in July, when it is expected that the usual shut down for repairs,

&c., will take place. The New York price for small lots of Wire Nails from store is held at \$1.80.

Advices from Chicago.—There is no let up in the demand for Wire Nails. Makers are of the opinion that at the present rate of receiving orders their entire output for July will be sold before the 10th of that month. Manufacturers are not booking orders for delivery earlier than July 1. Jobbers are quoting \$1.75 in any quantity from stock and are doing a large trade.

Cut Nails.—An advance corresponding to that made in Wire Nails has been made by the manufacturers of Cut Nails. The New York prices are as follows: Small lots from store, \$1.60; carload lots on dock, \$1.45; small lots on dock, \$1.56.

Advices from Chicago.—The Cut Nail trade has also felt the influence of higher prices. Manufacturers are well supplied with orders. Jobbers report a light demand and quote \$1.50 to \$1.60 from stock in any quantity.

Barb Wire.—The Barb Wire market continues to be characterized by an excellent tone, with a large volume of business, considering the season of the year. Prices are firm at former quotations.

Advices from Chicago.—The demand for Wire is extra good for the season. Makers say they cannot fill orders for immediate shipment and have advanced their prices. Jobbers' prices seem to vary to suit their respective conditions. Painted is quoted at \$1.85 to \$2 and Galvanized at \$2 to \$2.35, thus making the range abnormal wide on small lots.

Fittings.—The principal manufacturers of Valves and Fittings for water, steam and gas have been in session a number of times recently for the purpose of revising many of the lists on this line of goods. It is not with a view to raising or lowering prices that this is being done, as that can be effected by changing discounts, but for the purpose of replacing antiquated and disproportionate lists that now bear little relation to cost. Improved methods of manufacture, together with changes in the cost of materials, labor, &c., have contributed mainly to the discrepancies that now exist and make it necessary to have a multiplicity of discounts where fewer would be sufficient and give greater accuracy and simplify business. It is believed this effort will meet the approbation of the trade.

Binder Twine.—There is little change in the condition of the Binder Twine market since our last reference to it. The market is represented by the following quotations:

	Per pound.	Cents.
Sisal.....	4 1/4	
Standard.....	4 1/4	
Manila.....	5 1/2	
Pure Manila.....	6 1/4	

Wrought Iron Pipe.—Notwithstanding the fact that there have been within a short time several advances on Wrought Iron Pipe, the market is still characterized by a firm tone and has an upward tendency. The present prices represent the market for ordinary lots:

	Per cent.
1 1/4 inches and under, Plain, .62 and 10 and 5	
1 1/4 inches and under, Galvanized.....	.57 and 10 and 5
1 1/2 inches and over, Plain, .70 and 10 and 5	
1 1/2 inches and over, Galvanized.....	.60 and 10 and 5

Corresponding advances have been made in Boiler Tubes and Casing.

Corn Popper.—The Quincy Corn Popper, illustrated in our issue of 22d inst., and put on the market by the Quincy Hardware Mfg. Company,

Quincy, Ill., is sold to the trade at 25 cents each for the No. 1, holding 1 quart, and 35 cents each for the No. 2, holding 2 quarts.

Cordage.—The demand for Rope is good and the market fairly firm. There is, however, some irregularity in the prices named by the different manufacturers. Manila is regularly quoted on a basis of 6 1/4 to 6 1/2 cents and Sisal at about 4 1/2 cents per pound; but these prices are sometimes shaded on large and attractive orders.

Glass.—On or before July 1 all the Window Glass factories will be closed for the summer, and production will cease until September or later. It is estimated that stocks on hand will be sufficient for the requirement of the trade until the factories are again in full blast. There is considerable speculation as to whether Glass will be higher in the fall, and it is understood that speculative buying is being done by jobbers, especially where manufacturers in need of cash can be induced to shade present prices. The shading of prices, however, is reported as extremely rare, the market as a rule being firm. Consumptive demand is fair, and orders have been quite freely placed with jobbers for immediate and future delivery. Discounts adopted May 1 represent present quotations.

Eave Troughs.—Discounts on Eave Troughs have been reduced by jobbers to 70 per cent. off for Galvanized Lap or Lap Joint and 65 per cent. off for Terne Lap or Slip Joint. The discount on Eave Trough Mitres has been correspondingly reduced to 20 per cent. off.

Old Metals.—The market for Old Metals of all descriptions continues good, Copper and Brass Scrap, in particular, being in active request. Scrap Iron moves briskly, and prices are quite firm with an advancing tendency. The following quotations represent dealers' purchasing prices for moderate sized lots, New York City delivery:

Heavy Copper.....	73 1/2¢
Light and mixed Copper.....	71 1/2¢
Heavy Brass.....	5 1/2¢
Light Brass.....	4 1/2¢
Lead.....	3 1/4¢
Tea Lead.....	28 1/2¢
Zinc.....	24 1/2¢
No. 1 Pewter.....	19 1/2¢
No. 2 Pewter.....	18 1/2¢
Wrought Scrap Iron, 1/2 gross ton.....	\$3.75 to \$9.00
Heavy Cast Scrap.....	8.50 to 9.00
Stove Plate Scrap, 1/2 gross ton.....	6.00 to 6.50
Burnt Iron.....	gross ton 5.00

Old Rags, Paper, &c.—The market is fairly brisk for Paper Stock of all kinds, and the outlook is regarded as promising. Prices are very firm in nearly all lines. Dealers purchasing prices, New York City delivery, rule about as follows:

No. 1 White Rags.....	1/3	to	3/4
No. 2 White Rags.....	2 1/2	to	3 1/2
Mixed Rags.....	5/8	to	1
Blues and Sds.....	1	to	1 1/8
Hard Sized White Shavings.....	2 1/2	to	2 3/4
No. 1 White Book Shavings.....	19 1/2	to	21 1/2
No. 2 White Book Shavings.....	13	to	14 1/2
Light Book Shavings.....	1/2	to	5/8
No. 1 Mixed Shavings.....	3/4	to	1
No. 2 Mixed Shavings.....	5/8	to	3/4
No. 1 Printed Books.....	1	to	1 1/4
Ordinary Mixed Books.....	3/4	to	5/8
Newspapers.....	1/2	to	3/4
No. 1 Manila Paper.....	1/2	to	1
No. 2 Manila Paper.....	3/4	to	1 1/2
Bogus Paper.....	1/2	to	3/4
Common Paper.....	1/4	to	3/8
Straw Chips.....	1/2	to	3/4
Binders' Clippings.....	1/2	to	3/4
Gate Butts.....	1 1/2	to	1 3/4
No. 1 Mixed Bagging.....	1	to	1 1/4
Mixed Bagging.....	3/4	to	1
No. 2 Bagging.....	3/4	to	1
Hemp Twine.....	1/2	to	2 1/4
Manila Rope.....	1 1/2	to	2 1/4
Jute Rope.....	1 1/2	to	1 3/4
Mixed Rope.....	1/2	to	3/4

Old Rubber.—The following quotations represent about the current prices paid by New York Dealers:

Car Springs, ton lots, 1/2 lb.....	3 1/4¢
Rubber Shoes, carloads, delivered at factory, 1/2 lb.....	4 1/2¢
Rubber Shoes, less than carloads, 1/2 lb.....	4 1/2¢
White Wringer Rolls, 1/2 lb.....	5 1/2¢
White Syringes, 1/2 lb.....	8 1/2¢

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